

(19)



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11)

**EP 1 039 753 B1**

(12)

**EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention  
of the grant of the patent:  
**24.05.2006 Bulletin 2006/21**

(51) Int Cl.:  
**H04N 7/16 (2006.01)**

(21) Application number: **00106194.4**

(22) Date of filing: **22.03.2000**

(54) **Broadcast transmitting apparatus, receiving apparatus, broadcast transmitting method and receiving method**

Rundfunkübertragungsvorrichtung, Empfangsgerät, Rundfunkübertragungsverfahren und -empfangsverfahren

Appareil de transmission de télédiffusion, appareil de réception et méthode de télédiffusion de transmission et de réception

(84) Designated Contracting States:  
**DE FR GB**

(30) Priority: **24.03.1999 JP 8034799**

(43) Date of publication of application:  
**27.09.2000 Bulletin 2000/39**

(73) Proprietor: **MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.**  
**Kadoma-shi, Osaka 571-8501 (JP)**

(72) Inventors:  
• **Fujita, Mitsuko**  
**Tokyo, 153-0061 (JP)**

• **Shinohara, Hiroki**  
**Yokohama-shi,**  
**Kanagawa, 244-0801 (JP)**

(74) Representative: **Kügele, Bernhard et al**  
**Novagraaf SA**  
**25, Avenue du Pailly**  
**1220 Les Avanchets - Geneva (CH)**

(56) References cited:  
**EP-A- 0 720 369** **WO-A-00/16548**  
**WO-A-91/03112** **US-A- 5 625 464**  
**US-A- 5 640 453** **US-A- 5 774 170**  
**US-A- 5 825 354**

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

**EP 1 039 753 B1**

## Description

### FIELD OF THE INVENTION

**[0001]** The present invention relates to a broadcast transmitting apparatus, a receiving apparatus, a broadcast transmitting method and a receiving method for a broadcasting system, in which a receiving side stores and reproduces the programs sent from a transmitting side. Particularly, this invention relates to the broadcast transmitting and the receiving apparatuses and methods of a system for enabling a transmitter to control the storing and the reproducing activities of a receiver.

### BACKGROUND OF THE INVENTION

**[0002]** Recently, with the advancement in communication technology and data processing technology, multimedia information such as audio information and visual information has come to be presented to the user in digital form, and as a result of introduction of memory medium with large capacity, it is going to realize a broadcasting system capable of transmitting a huge quantity of data by using broadcasting or communication equipment, receiving and storing in a terminal device at user side, and viewing at a desired timing.

**[0003]** Such broadcasting system is disclosed, for example, in Japanese Laid-open Patent JP-A-9-135391. In this broadcasting system, after a highlight scene of a broadcast program is transmitted, segment information relating to the highlight scene is transmitted as additional information simultaneously with the live broadcast program. The receiving apparatus always stores the live broadcast program in a storing device, and when the segment information indicating the segment of highlight scene is detected, only the corresponding highlight scene is re-stored from the broadcast programs in the storing device. Thus, the re-stored highlight scene can be reproduced and viewed whenever desired.

**[0004]** In the broadcasting system disclosed in Japanese Laid-open Patent JP-A-10-304321, a broadcast transmitting apparatus transmits a broadcast program and additional information at the same time, and a receiving apparatus stores the broadcast program and the additional information together. In this system, with an instruction from the viewer, information about the broadcast program can be viewed from the receiving apparatus, the broadcast program can be viewed repeatedly, and other varied and efficient viewing services are available such as shortened viewing and variable viewing.

**[0005]** In these broadcasting systems, the transmitting side send parameter as additional information processable by a program prepared in a receiving apparatus together with broadcast programs. Then the receiving apparatus stores the data and executes the program. In this system, the viewer has controls over the program, and the service according to the preference of the viewer can be presented. It is therefore difficult for the transmitting

side to control the program and to present the broadcast program service suited on the basis of their intent.

**[0006]** Reference may also be made to WO 91/03112 which discloses the precharacterizing features of the present invention. Reference may also be made to US-A-5774170, EP-A-0720369 and US-A-5625464.

### SUMMARY OF THE INVENTION

**[0007]** The present invention is defined in the claims.

**[0008]** An advantage of the invention is that it can present a broadcast transmitting apparatus and a receiving apparatus in which a transmitting side(party) has a control for such activities as transmitting AV data using the transmitting apparatus, storing the AV data in the receiving apparatus and executing various broadcast services at the receiving side by using the stored AV data.

**[0009]** In one embodiment of the invention, the broadcast transmitting apparatus comprises means for storing and managing AV data including video or audio, and its attribute for managing the AV data, means for managing the on-air schedule, means for creating reference information, and means for storing and managing the reference information. The AV data and the reference information are transmitted. The reference information creating means reads the attribute data of the AV data from the AV data storing and managing means, and reads the schedule information from the schedule managing means, then creates the AV data storing control information showing the processing and controlling method when storing the received AV data in a receiving apparatus, and creates the AV data storing management information showing the management information when storing the AV data at the receiving side.

**[0010]** The transmitting apparatus further comprises application information creating means for creating application information showing how to use the AV data in the service application for executing the broadcast program service from the reference information, and application information storing and managing means for storing and managing the application information and controlling its transmission. It moreover comprises service application storing and managing means for storing and managing the service application and controlling its transmission, and transmitting means for transmitting the application information issued from the application information storing and managing means and the service application issued from the service application storing and managing means.

**[0011]** In this embodiment, the broadcast receiving apparatus comprises receiving means for receiving a broadcast program, separating the program, and extracting AV data and reference information, AV decoding means for taking the AV data into an inner buffer and decoding the AV data therein, AV reproducing means for reproducing the AV data, reference information processing means for controlling AV data storing according to the storing control information of the reference informa-

tion, and AV data storing and managing means for storing and managing the AV data together with the storing management information of the reference information.

**[0012]** In this constitution, the broadcast transmitting apparatus creates information for managing the AV data of broadcast program to be stored in the broadcast receiving apparatus, broadcasts together with AV data, and stores the AV data in the broadcast receiving apparatus according to the schedule of broadcast program.

**[0013]** The broadcast transmitting apparatus further creates application information from the reference information being stored and managed, and transmits the application information together with the service application for executing the broadcast program service. Receiving them, the broadcast receiving apparatus extracts the corresponding AV data from the AV data being stored and managed according to the application information, and executes the service application. In this way, the transmitting side have control over the receiving side to present the broadcast program to meet the transmitter's intention.

#### BRIEF DESCRIPTION OF THE DRAWINGS

##### **[0014]**

Fig. 1 is a block diagram showing a basic constitution of a broadcast transmitting apparatus and its receiving apparatus of the invention,

Fig. 2 is a diagram showing data created by reference information creating means of the invention,

Fig. 3 is a diagram showing data transmitted from the broadcast transmitting apparatus to the broadcast receiving apparatus of the invention,

Fig. 4 is a diagram showing data changed by the broadcast transmitting apparatus in the second and the third embodiments of the invention,

Fig. 5 is a diagram showing data created by reference information creating means in the third embodiment of the invention,

Fig. 6 is a diagram showing data created by application information creating means from reference information of the invention,

Fig. 7 is a diagram showing data created by application information creating means from service application of the invention,

Fig. 8 is a diagram showing broadcast program service in the fourth embodiment of the invention,

Fig. 9 is a diagram showing broadcast program service in the sixth embodiment of the invention,

Fig. 10 is a diagram showing data stored and managed by AV data storing and managing means in the sixth embodiment of the invention,

Fig. 11 is a diagram showing data created by application information processing means in the sixth embodiment of the invention,

Fig. 12 is a flowchart showing reference information creating process in the first embodiment of the in-

vention,

Fig. 13 is a flowchart showing reference information transmitting process in the first embodiment of the invention,

Fig. 14 is a flowchart showing AV data storing process in the first embodiment of the invention,

Fig. 15 is a flowchart explaining the details of processing at step S3-3 in Fig. 14,

Fig. 16 is a flowchart explaining reference information changing process in the second embodiment of the invention,

Fig. 17 is a flowchart explaining schedule information reorganizing process in the third embodiment of the invention,

Fig. 18 is a flowchart explaining application information creating process in the fourth embodiment of the invention,

Fig. 19 is a flowchart explaining broadcast program service storing process in the fourth embodiment of the invention,

Fig. 20 is a flowchart explaining broadcast program service process in the fourth and fifth embodiment of the invention,

Fig. 21 is a flowchart explaining user information utilizing process in the sixth embodiment of the invention,

Fig. 22 is a flowchart explaining user information utilization deleting process in the seventh embodiment of the invention, and

Fig. 23 is a flowchart explaining automatic tuning storing broadcast program service process in a eighth embodiment of the invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

##### First Exemplary Embodiment

**[0015]** An embodiment of the invention is described below by referring to the accompanying drawings.

**[0016]** A broadcasting system of the first embodiment comprises, as shown in Fig. 1, a broadcast transmitting apparatus 100 for transmitting a broadcast program, and a broadcast receiving apparatus 110 for receiving the broadcast program. The broadcast transmitting apparatus 100 broadcasts signals having reference information and AV data which comprises broadcast program materials such as video and audio and additional data. The broadcast receiving apparatus 110, when receiving and storing the AV data, controls the AV data storing in accordance with the reference information. Also controlling the reproduction of the stored AV data, the broadcast receiving apparatus provides the broadcast program service intended by the broadcast program service.

**[0017]** The operation of this broadcasting system is explained below by referring to Figs. 1, 2, 3, 12, 13, 14, and 15.

**[0018]** Transmitting side AV data storing and manag-

ing means 101 of the broadcast transmitting apparatus 100 stores and manages the AV data comprising audio and video for forming the broadcast program, and AV data attribute information showing its attribution. The AV data attribute information 201 shown in Fig. 2 is composed of data identifier, data size, duration, update information such as version information and the like and group identifier.

**[0019]** The data identifier includes video identifier, audio identifier, signal identifier, code identifier, and time identifier, which are identifiers designed uniquely in the system, whereas the group identifier is an identifier designed to be a unique group in the system.

**[0020]** Schedule managing means 102 creates schedule information 202, by combining information such as on-air start time and the AV data attribute information, in order to create the schedule of broadcast program, and manages by making use of the data identifier. In the term of data identifier 1 of schedule information in Fig. 2, it shows that the broadcast of the material is started at 10:00:00, 10:14:00, and 10:28:00.

**[0021]** Reference information creating means 103 of the broadcast transmitting apparatus 100 creates reference information for storing the AV data of broadcast program in the broadcast receiving apparatus 110.

**[0022]** A flowchart of this process is shown in Fig. 12, and the created reference information 203 is shown in Fig. 2.

**[0023]** The reference information creating means 103 first creates, of the reference information, storing control information showing a processing control method when storing AV data of broadcast program in the broadcast receiving apparatus, then creates storing management information showing management information when storing the AV data of broadcast program in the broadcast receiving apparatus.

Step S1-1: The reference information creating means 103, in order to create storing control information, reads out the data size registered in the AV data attribute information 201 and the on-air start time registered in the schedule information 202.

Step S1-2: A storing Ready command is created. This command is a storing control command for preparing for storing AV data before its on-air start time (3 minutes before herein), and checking if the broadcast receiving apparatus has enough capacity for storing the data size of the AV data.

Step S1-3: A storing Go command is created. This command is a storing control command for starting storing AV data when reaching the on-air start time.

Step S1-4: A storing Stop command is created. This command is a storing control command for stopping storing AV data when the on-air time is over by judging from the broadcast duration registered in the AV data attribute information 201 and the on-air start time registered in the schedule information 202.

Step S1-5: The storing control commands created

so far, that is, storing Ready, storing Go and storing Stop commands are registered as storing control information 204.

Step S1-6: Next, in order to create storing management information, the group identifier registered in the AV data attribute information 201 is read out, and information of a specific data name is created for each group identifier, and registered the information in storing management information 205. Moreover, for creating other information, for example, update information, broadcast duration, and on-air start time, corresponding information is read out from the AV data attribute information 201, and registered in the storing management information 205.

Step S1-7: Later, the created storing control information 204 and storing management information 205 are stored and managed as reference information 203 in the reference information storing and managing means 104, by making use of the data identifier of the AV data attribute information 201.

**[0024]** In the next stage, the broadcast transmitting apparatus conducts transmitting activity in the procedure shown in Fig. 3 and Fig. 13, in order to store the AV data of broadcast program in the broadcast receiving apparatus by making use of the created reference information.

**[0025]** Fig. 3 shows how the storing management information and the storing control information are transmitted in order to store the AV data of broadcast program called drama program (a) from 10:00 to 10:30 presented by four companies, A, B, C, D, in the broadcast receiving apparatus. In the diagram, a1 shows a first half of the drama, and A1, B1, C1, D1 indicate the first CM (commercial message) of each company.

Step S2-1: From the storing control information 204 of the reference information 203 stored and managed in the reference information storing and managing means 104, a storing control Ready command is read, and a storing control Ready command for the first CM of Co. A is transmitted at 9:57:00.

In the same manner, first CMs of Co. B, Co. C, Co. D, and the first accumulation control Ready command of drama program (a) are transmitted at 9:57:30, 9:57:45, 9:58:45, and 9:59:00, respectively.

Step S2-2: At 10:00:00, broadcasting of drama program (a) is started, and simultaneously, according to the broadcast program schedule, first, the AV data of the first CM of Co. A is transmitted. At the same time, as reference information, a storing control Go command of the first CM of Co. A and storing management information are transmitted.

Step S2-3: At 10:00:30, broadcasting of the first CM of Co. A is over, and, simultaneously, the transmission of AV data of the first CM of Co. A is terminated. At the same time, as reference information, a storing control Stop command of the first CM of Co. A is transmitted, and transmission of storing manage-

ment information is terminated.

Thereafter, in the same way, AV data of each first CM of Cos. B, C, D and reference information are transmitted.

Step S2-4: At 10:30:00, broadcasting of drama program (a) is over, and, simultaneously, transmission of AV data of drama program (a) and reference information is terminated.

**[0026]** The operation of storing AV data of a broadcast program in the broadcast receiving apparatus by making use of the reference information transmitted from the broadcast transmitting apparatus is explained below by referring to Figs. 3, 14 and 15.

**[0027]** Figs. 14 and 15 show the flow of processing in the broadcast receiving apparatus during this stage.

**[0028]** As mentioned above, from the broadcast transmitting apparatus 100, the AV data of broadcast program, and storing control information 204 and storing management information 205 are broadcasted as reference information 203.

**[0029]** Same as in the explanation of transmission, supposing the viewer in viewing the drama program (a) from 10:00 to 10:30 presented by the four companies, A, B, C, D, the operation of storing its AV data in the broadcast receiving apparatus is explained below. In the explanation below, the word, "to tune" is used. Originally the word has been used for the conventional analog televisions, and it implies to select a specific program by "tuning into" the corresponding radio frequency. For convenience's sake, the same word is used for the same action (selecting a specific program) in a digital television in this specification.

Step S3-1: The viewer tunes to the drama program (a) being on-air.

Step S3-2: Receiving means 111 separates and extracts AV data and reference information of the drama program (a), and AV data is sent into AV decoding means 112, and reference information into reference information processing means 115.

Step S3-3: When a storing control Ready command is entered as storing control information of reference information, the reference information processing means 115 executes the storing control Ready command.

The operation at this time is more specifically shown in the flowchart, Fig. 15.

Step S4-1: The reference information processing means 115 executes a storing control Ready command for the first CM of Co. A transmitted at 9:57:00, and checks if the broadcast receiving apparatus 110 has enough capacity for storing the AV data of the first CM of Co. A.

Step S4-2: If possible to store, it confirms if the AV data of the first CM of Co. A has been already stored.

Step S4-3: If the data has already stored, referring to the storing management information of the AV data

of the first CM of Co. A, update information, for example, Version information is registered.

Step S4-4: The stored AV data is deleted.

Step S4-5: A storing OK command is issued.

**[0030]** Hereinafter, in the same manner, the first CM of Co. B, Co. C, Co. D, and the first storing control Ready command of the drama program (a) are executed at 9:57:30, 9:57:45, 9:58:45, and 9:59:00, respectively (steps S4-1 to S4-6).

**[0031]** Back to Fig. 14,

Step S3-4: At 10:00:00, when broadcasting of drama program (a) is started, if the storing OK is issued by the storing control Ready command, the reference information processing means 115 processes as follows.

Step S3-5: Executing the storing control Go command of the first CM of Co. A being transmitted, simultaneously, the storing management information of the first CM of Co. A is read, the name of the data is extracted from the storing management information, the extracted data name is used as the file name, and storing the AV data of the first CM of Co. A is started.

Step S3-6: At 10:00:30, when broadcasting of first CM of Co. A is terminated, the storing control Stop command of the first CM of Co. A being transmitted is executed, and storing AV data of the first CM of Co. A is terminated.

**[0032]** In the same way, hereinafter, the AV data is stored until the end of broadcasting of the drama program (a) (steps S3-5 and S3-6).

**[0033]** Thus, the broadcast transmitting apparatus of the embodiment stores and manages the material for composing a broadcast program as AV data, creates storing control information showing the process control method when storing the AV data in the broadcast receiving apparatus and storing management information showing management information of the stored AV data, registers, stores and manages them as reference information, and transmits according to the schedule information managing the schedule of the broadcast program. The broadcast receiving apparatus executes a storing control command according to the storing control information, and stores and manages the AV data according to the storing management information. Through these processes, the broadcast transmitting apparatus creates the information for managing the AV data of the broadcast program to be stored in the broadcast receiving apparatus, broadcasts it together with the AV data, and can store the AV data in the broadcast receiving apparatus according to the schedule of broadcast program.

**[0034]** Further, this storing control information is judged whether it is possible to store the AV data or not. When storing the data is possible, a storing information command is issued, so that the AV data of the broadcast

program selected by the broadcast transmitting apparatus can be efficiently stored and managed in the broadcast receiving apparatus.

**[0035]** In this embodiment, the schedule information is managed by the data identifier of the AV data information, but not limited to this, it is possible to execute similarly with any information which is capable of managing the schedule information and AV data information in one-to-one correspondence.

**[0036]** In this embodiment, the preparation time for storing the data by storing Ready command is set to work 3 minutes before the broadcasting time, but not it is not limited. The time may be set freely prior to the broadcasting time.

**[0037]** Also in the embodiment, the information to be registered in the storing management information is the information of data name uniquely designated in each group identifier, update information, broadcast duration, and on-air start time. However these information cannot be limited either. Any other information which can identified the AV data to be stored can be used.

**[0038]** In this embodiment, the reference information is managed by the data identifier of the AV data information, but it is not limited to the example. It is possible to execute similarly with any information which is capable of managing the reference information and AV data information in one-to-one correspondence.

**[0039]** Also in this embodiment, the AV data is stored under the data name of the storing management information, but not limited to this. It is also possible to execute the storing under any other name as far as the AV data to be stored and managed can be specifically identified.

**[0040]** In the embodiment, the storing control command to be registered as storing control information consists of three commands, that is, storing Ready, storing Go, and storing Stop. command, but not necessary to limit to these three commands alone. It is similarly possible to execute by using other commands such as storing Pause command which is a storing control command for stopping storing activity temporarily, or storing Restart command which is a storing control command for restarting storing a data.

#### Second Exemplary Embodiment

**[0041]** A second exemplary embodiment relates to the operation of the broadcast transmitting apparatus in changing the reference information due to the schedule change of a broadcast program.

**[0042]** Fig. 16 is a flowchart showing the flow of the process for changing the reference information according to the schedule information by the broadcast transmitting apparatus when the schedule of the broadcast program is changed. And the operation is described below while referring to Figs. 1, 2, 4 and 5 as well.

**[0043]** As explained in the first exemplary embodiment, the reference information storing and managing means 104 stores and manages storing control information

tion 204 and storing management information 205 created in reference information creating means 103 as reference information 203.

**[0044]** As an example, the operation is explained below, where a two-minute urgent news program has to be broadcasted at 10:00:45 in the broadcast program 401 shown in Fig. 4.

Step S5-1: As in a fluid program 402, a two-minute urgent news program is inserted at 10:00:45, and the following programs are scheduled to be sequentially delayed two minutes.

Step S5-2: Schedule managing means 102 creates a new schedule information 502, as shown in Fig. 5, in which the programs after 10:00:45 are scheduled to be on-air being two-minute behind from the original schedule shown in a schedule information 501. Step S5-3: The reference information storing and managing means 104 extracts the AV data attribute information with the changed schedule in accordance with the schedule change from schedule information 501 to 502.

Step S5-4: Among the reference information 203 being stored and managed, the storing control information of the changed AV data is revised, and storing control information 504 is newly created.

Step S5-5: Among the reference information 203 being stored and managed, the stored management information of the changed AV data is also revised, and storing new management information 505 is created accordingly.

Step S5-6: Then changed reference information 503 is registered.

**[0045]** This embodiment relates to the example of inserting a two-minute urgent news program in the schedule of broadcast programs, but the length of an inserted program is not limited to two minutes. It is possible to execute the operation with inserting or deleting any programs with any duration.

**[0046]** In the embodiment, thus, the broadcast transmitting apparatus further comprises means for changing the reference information being stored and managed according to the schedule information when the schedule of broadcast programs is changed. As a result, if the schedule of broadcast programs is changed due to an urgent news program or the like, it can be handled flexibly at the broadcast transmitting apparatus side without changing the data being stored and managed by the broadcast receiving apparatus.

#### Third Exemplary Embodiment

**[0047]** A third exemplary embodiment relates to the operation of terminating the schedule of broadcast programs within a broadcasting time frame, by using reference information, when the schedule of broadcast program is changed.

**[0048]** Fig. 17 is a flowchart showing the flow of the process at the broadcast transmitting apparatus during executing the change, and the operation is described below while referring to Figs. 1, 2 and 4 as well.

**[0049]** As explained in the first exemplary embodiment, the reference information storing and managing means 104 stores and manages the storing control information 204 and storing management information 205 created in the reference information creating means 103 as reference information 203.

**[0050]** In the second exemplary embodiment, in the broadcast program 401 in Fig. 4, if necessary to broadcast a two-minute urgent news program at 10:00:45, this program is inserted, and the following schedule is delayed two minutes by changing the schedule. As a result, the schedule of broadcast programs exceeding the original broadcasting time frame by two minutes is created as in the fluid program 402.

**[0051]** Therefore, the schedule managing means 102 processes in order to finish the broadcasting within the scheduled broadcasting time frame, and the process is explained as follows.

Step S6-1: The storing management information 205 of the reference information 203 stored and managed by the reference information storing and managing means 104 is referred.

Step S6-2: According to the reference, A1, B1, C2, D1 which have the shortest broadcast duration among the CMs of each company A to D are respectively extracted.

Step S6-3: Long duration CM programs of each company are replaced by the extracted AV data A1, B1, C2, D1 of the companies A to D, and the schedule information is reorganized.

Step S6-4: Then a corrected program 403 in Fig. 4 is created.

**[0052]** This embodiment uses an example of inserting a two-minute urgent news program in the schedule of broadcast programs, but it is not limited to this example. It is possible to execute the operation with inserting or deleting any programs with any duration.

**[0053]** In this embodiment, thus, the broadcast transmitting apparatus further comprises means for creating the schedule of broadcast program to finish broadcasting within the scheduled broadcasting time frame by using the reference information being stored and managed. As a result, if the schedule of broadcast programs is changed due to a urgent news program or the like, the schedule of broadcast programs can be reorganized to be finished within the originally scheduled broadcasting time frame at the broadcast transmitting apparatus side without changing the data being stored and managed by the broadcast receiving apparatus.

#### Fourth Exemplary Embodiment

**[0054]** A fourth exemplary embodiment relates to the operation of presenting broadcast program service by using the AV data stored and managed in the broadcast receiving apparatus.

**[0055]** The operation is explained by referring again to the example of broadcast program of drama program (a) from 10:00 to 10:30 presented by four companies A, B, C, D as shown in 401 in Fig. 4. Companies A to D broadcast CM before, during, and after the drama program (a). Co. A broadcasts 30-second CM three times. Co. B broadcasts 30-second, 15-second and 45-second CM once each. Co. C broadcasts 60-second CM once and 15-second CM twice. Co. D broadcasts 15-second CM twice, and 30-second CM also twice.

**[0056]** In this program, using the AV data already stored in the broadcast receiving apparatus, the following broadcast services are presented:

##### 1) Re-run program service

**[0057]** A re-run service of drama program (a) at 11:00:00 on January 1, 1999. Without transmitting the data of the drama program (a) again from the broadcast transmitting apparatus, the stored AV data may be reproduced.

##### 2) CM-shortened broadcast program service

**[0058]** A service of broadcasting the CMs with the shortest duration among the CM programs of the same companies (in this embodiment, the companies A, B, C, D) during broadcasting of the drama program (a). This is intended to be viewed the shortened CM broadcast duration when broadcasting the program.

##### 3) CM priority order broadcast program service

**[0059]** A service of broadcasting in which the CMs with the higher priority may be viewed in broadcasting of drama program(a). For example, the following services are presented.

##### 3.1) CM mid-program broadcasting service

**[0060]** Broadcast from midst of drama program (a) (on-air start time 10:10:00). The priority order of CM is high in the sequence of broadcasting.

##### 3.2) Longer CM priority broadcast program service

**[0061]** Priority order is higher in the longer duration of CM programs of each company.

##### 3.3) Shorter CM priority broadcast program service

**[0062]** Priority order is higher in the shorter duration of

CM programs of each company.

**[0063]** To present these broadcast program services, the broadcast transmitting apparatus creates application information, that is, information showing method of use of AV data (such as sequence of use of AV data) in the broadcast program service.

**[0064]** The reference information storing and managing means 104 of the broadcast transmitting apparatus 100 stores and manages, as shown in Fig. 6, storing control information 601 and storing management information 602 created in the reference information creating means 103 as reference information 603, and the application information creating means 105 creates, as shown in Fig. 6, application information composed of program information for specifying the program and broadcast information showing the sequence of the use of the AV data from this reference information 603. This operation is described below while referring to the flowchart in Fig. 18.

Step S7-1: For example, to create program information in application information of broadcast program service of drama program (a) from 10:00 to 10:30 presented by companies A, B, C, D, the information of the program name (drama program (a) in this embodiment) is registered in the application information 604 as program information.

Step S7-2: When creating the program information of the application information, the information of on-air start time is read out from the storing management information 602 registered in the reference information 603.

Step S7-3: The information of the data name of the AV data to be broadcast from 10:00 to 10:30 is read out, and a1, a2, A1, B1, B2, B3, C1, C2, D1, D2 are extracted.

Step S7-4: Searching the broadcasting sequence of the extracted AV data, information of broadcasting sequence composed of A1, B1, C1, D1, a1, A1, B2, C2, D2, a2, A1, B3, C2, D1, D2 is created as broadcast information.

Step S7-5: The created program information and the broadcast information are registered as application information 604 corresponding to the drama program (a) from 10:00 to 10:30.

Step S7-6: The transmitting side application information storing and managing means 106 stores and manages the information 604.

**[0065]** Consequently, from the broadcast transmitting apparatus, the application information and service application are transmitted, and stored in the broadcast receiving apparatus.

**[0066]** Fig. 19 is the flowchart showing flow of the process of the receiving apparatus for storing and managing the broadcast program service application information.

**[0067]** As mentioned above, the transmitting side application information storing and managing means 106 of the broadcast transmitting apparatus 100 stores and

manages the application information 701 corresponding to the drama program (a) from 10:00 to 10:30 created by the application information creating means 105.

**[0068]** The transmitting side service application storing and managing means 107 of the broadcast transmitting apparatus 100 stores and manages the aforesaid broadcast program service applications 1 to 3.

**[0069]** Fig. 7 shows various types of broadcast program service application information created by the broadcast transmitting apparatus from service information and processing information. The operation to transmit this information from the broadcast transmitting apparatus and to store in the broadcast receiving apparatus is explained below.

**[0070]** Almost all steps in Fig. 19 are the same to all broadcast services. Hence, the same portions are not explained in each broadcast service.

#### 1) Re-run program service

##### **[0071]**

Step S8-1: Before executing specified program service, first, the broadcast transmitting apparatus 100 transmits the corresponding broadcast program service application processing program.

Step S8-2: It is stored in the receiving side service application storing and managing means 117 of the broadcast receiving apparatus 110.

Step S8-3: The broadcast transmitting apparatus 100 reads in the application information (701 in Fig. 7) stored and managed in the transmitting side application information storing and managing means 106.

Step S8-4: To re-run a program at 11:00:00 on January 1, 1999, the on-air time of 11:00:00 on January 1, 1999 as processing information and "re-run program service" of broadcast program service name as service information are registered. The broadcast program service information 702 composed of this service information and processing information are added to the application information 701, and re-run program service application information 703 is created, which to be stored in the transmitting side service application storing and managing means 107.

Step S8-5: The broadcast transmitting apparatus 100, then, transmits the corresponding broadcast program service application information 703 to the broadcast receiving apparatus 110.

Step S8-6: It is stored in the receiving side service application storing and managing means 117 of the broadcast receiving apparatus 110.

**[0072]** Meanwhile, in the broadcast receiving apparatus 110, the receiving means 111 can separate the received information into application information and service application, and the application information may be managed by the receiving side application information



storing and managing means 116, and the service application may be stored and managed by the receiving side service application storing and managing means 117.

## 2) CM shortened broadcast program service

### [0073]

Steps S8-1 to S8-3: Same as above.

Step S8-4: In order to broadcast the CMs with the shortest duration among CM programs of each company (companies A to D), group identifiers A, B, C, D of the companies for broadcasting shortened CM as processing information and "CM shortened broadcast program service" of broadcast program service name as service information are registered. The broadcast program service information 702 composed of this service information and processing information are added to the application information 701, and CM shortened broadcast program service application information 704 is created, which to be stored in the transmitting side service application storing and managing means 107.

Steps S8-5 and S8-6: Same as above.

## 3) CM priority order broadcast program service

### 3.1) CM mid-program broadcasting service

#### [0074]

Steps S8-1 to S8-3: Same as above.

Step S8-4: To start broadcast from 10:10:00, with CM broadcast according to the broadcasting sequence, the priority order becomes the broadcasting sequence. The on-air start time 10:10:00 is converted to the broadcast duration of AV data a1 of drama program (a),  $(10:10:00 - 10:02:00 (\text{min. of on-air start time of a})) = 8 \text{ minutes} = 480 \text{ sec}$  is the one-air start time, the processing information is registered, "CM mid-program broadcasting service" of broadcast program service name as service information. The broadcast program service information 702 composed of the service information and processing information are added to the application information 701, and the CM mid-program broadcasting service application information 705 is created and stored in the transmitting side service application storing and managing means 107.

Steps S8-5 and S8-6: Same as above.

### 3.2) Longer CM priority broadcast program service

#### [0075]

Steps S8-1 to S8-3: Same as above.

Step S8-4: To broadcast in the sequence of the CM with longest duration among CM programs of each

company, the group identifiers A, B, C, D of the companies broadcasting shortened CM programs are registered as processing information by ranking the priority order to broadcast from MAX (longest broadcast duration) to MIN (shortest broadcast duration). The "CM long-short time broadcast program service" with the broadcast program service name is registered as service information. The broadcast program service information 702 composed of this service information and processing information are added to the application information 701, and the CM long-short time broadcast program service application information 706 is created and stored in the transmitting side service application storing and managing means 107.

Steps S8-5 and S8-6: Same as above.

### 3.3) Shorter CM priority broadcast program service

#### [0076]

Steps S8-1 to S8-3: Same as above.

Step S8-4: To broadcast in the sequence of the CM with shortest duration among CM programs of each company, the group identifiers A, B, C, D of the companies broadcasting shortened CM programs are registered as processing information by ranking the priority order to broadcast from MIN (shortest broadcast duration) to MAX (longest broadcast duration). The "CM short-long time broadcast program service" of broadcast program service name is registered as service information. The broadcast program service information 702 composed of this service information and processing information are added to the application information 701, and the CM short-long time broadcast program service application information 707 is created and stored in the transmitting side service application storing and managing means 107.

Steps S8-5 and S8-6: Same as above.

[0077] The following is the operation in which the broadcast receiving apparatus broadcasts specified programs by using already stored and managed AV data, broadcast program service application processing program, and broadcast program service application information.

[0078] Fig. 20 is the flowchart showing flow of the process in which the broadcast receiving apparatus executes a broadcasting service by using the stored AV data in accordance with application information. Fig. 8 shows various examples of broadcast program service presented at the receiving side, in which reference numeral 801 is a program organization initially received and stored and 802 to 806 are program organizations of various broadcast program services. The operation is described below by referring to Figs. 1 and 7 as well.

[0079] Various broadcast program services are de-

scribed in detail below.

#### 1) Re-run program service

[0080]

Step S9-1: The application information processing means 118 of the broadcast receiving apparatus 110 reads in the re-run program service application information 703 stored and managed in the receiving side service application storing and managing means 117.

Step S9-2: The re-run program service application processing program is executed according to the service information when reaching 11:00:00, January 1, 1999, according to the on-air time registered as processing information.

Step S9-3: The re-run program service application processing program extracts A1, B1, C2, D1, a1, A1, B1, C2, D1, a2, A1, B1, C2, and D1 from the AV data stored and managed in the AV data storing and managing means 114 according to the broadcast information of the re-run program service application information 703.

Step S9-4: As shown in re-run 802, Fig. 8, when AV data A1, B1, C2, D1, a1, A1, B1, C2, D1, a2, A1, B1, C2, and D1 are reproduced sequentially, the program can be re-run without transmitting data of the drama program (a) again from the broadcast transmitting apparatus.

#### 2) CM shortened broadcast program service

[0081]

Step S9-1: The application information processing means 118 of the broadcast receiving apparatus 110 reads in the CM shortened broadcast program service application information 704 stored and managed in the receiving side service application storing and managing means 117.

Step S9-2: The CM shortened broadcast program service application processing program is executed according to the service information.

Step S9-3: The CM shortened broadcast program service application processing program extracts A1, B1, C2, D1, a1, A1, B1, C2, D1, a2, A1, B1, C2, and D1 from the AV data stored and managed in the receiving side AV data storing and managing means 114 according to the broadcast information of the CM shortened broadcast program service application information 704.

Step S9-4: As shown in CM shortened broadcast 803, Fig. 8, from the AV data having group identifiers A, B, C, D of the companies presenting CM registered in the processing information of the CM shortened broadcast program service application information 704, A1, B1, C2, and D1 of shortest duration

are extracted, and by broadcasting in the sequence of A1, B1, C2, D1, a1, A1, B1, C2, D1, a2, A1, B1, C2, and D1, the entire broadcast duration is shortened, and the CM may be also viewed.

#### 3) CM priority order broadcast program service

##### 3.1) CM mid-program broadcasting service

[0082]

Step S9-1: The application information processing means 118 of the broadcast receiving apparatus 110 reads in the CM mid-program broadcasting service application information 705 stored and managed in the receiving side service application storing and managing means 117.

Step S9-2: The CM mid-program broadcasting service application processing program is executed in accordance with the on-air time registered as processing information and the service information from 480 sec of drama a1.

Step S9-3: The CM mid-program broadcasting service application processing program extracts A1, B1, C2, D1, a1, A1, B1, C2, D1, a2, A1, B1, C2, and D1 from the AV data stored and managed in the receiving side AV data storing and managing means 114 according to the broadcast information of the CM mid-program broadcasting service application information 705.

Step S9-4: As in CM mid-program broadcast 804 in Fig. 8, broadcast is started from 480 sec of the AV data a1 of the drama program (a), A1, B1, C2, D1, a2, A1, B1, C2, and D1 are broadcast in the same sequence referred from the priority order / broadcast sequence registered as the processing information of CM mid-program broadcasting service application information 705, CM is broadcast from the CM with higher priority order.

##### 3.2) Longer CM priority broadcast program service

[0083]

Step S9-1: The application information processing means 118 of the broadcast receiving apparatus 110 reads in the longer CM priority broadcast program service application information 706 stored and managed in the receiving side service application storing and managing means 117.

Step S9-2: The longer CM priority broadcast program service application processing program is executed according to the service information.

Step S9-3: The longer CM priority broadcast program service application processing program extracts A1, B1, C2, D1, a1, A1, B1, C2, D1, a2, A1, B1, C2, and D1 from the AV data stored and managed in the receiving side AV data storing and man-

aging means 114 according to the broadcast information of the longer CM priority broadcast program service application information 706.

Step S9-4: As in longer CM priority broadcast 805 in Fig. 8, according to the priority order registered in the processing information of the longer CM priority broadcast program service application information 706, by broadcasting in the sequence of A1, B2, C1, D2, a1, A1, B3, C2, D2, a2, A1, B1, C2, D1, D1 sequentially from the AV data of the longest broadcast duration among the AV data having group identifiers A, B, C, D of the companies presenting CM, the CM broadcast of broadcast program can be viewed preferentially from the CM with the longest broadcast duration of a company.

### 3.3) Shorter CM priority broadcast program service

#### [0084]

Step S9-1: The application information processing means 118 of the broadcast receiving apparatus 110 reads in the shorter CM priority broadcast program service application information 707 stored and managed in the receiving side service application storing and managing means 117.

Step S9-2: The shorter CM priority broadcast program service application processing program is executed according to the service information.

Step S9-3: The shorter CM priority broadcast program service application processing program extracts A1, B1, C2, D1, a1, A1, B1, C2, D1, a2, A1, B1, C2, and D1 from the AV data stored and managed in the receiving side AV data storing and managing means 114 according to the broadcast information of the shorter CM priority broadcast program service application information 707.

Step S9-4: As in shorter CM priority broadcast 806 in Fig. 8, according to the priority order registered in the processing information of the shorter CM priority broadcast program service application information 707, by broadcasting in the sequence of A1, B1, C2, D1, a1, A1, B3, C2, D1, a2, A1, B2, C1, D2, D2 sequentially from the AV data of the shortest broadcast duration among the AV data having group identifiers A, B, C, D of the companies presenting CM, the CM broadcast of broadcast program can be viewed preferentially from the CM with the shortest broadcast duration of a company.

[0085] Thus, the broadcast transmitting apparatus of the embodiment creates application information from the stored and managed reference information, and transmits it together with the service application for executing broadcast program service. Then, the broadcast receiving apparatus receiving them extracts the corresponding AV data from the stored and managed AV data according to the application information, and executes the service

application.

[0086] Accordingly, the broadcast transmitting apparatus can present the broadcast program service by making use of the AV data stored and managed in the broadcast receiving apparatus. Therefore, the broadcast program service at the broadcast receiving apparatus can be managed by the broadcast transmitting apparatus.

[0087] In this embodiment, as the broadcast program service to be presented, CM broadcast program service is used as an example, but not limited to this. Other service may be similarly executed as far as the service is specified by service application and the information for making use of AV data of broadcast program is presented by application information.

[0088] The program name registered in the program information is used in this exemplary, but not limited to this. Other information may be used as far as the program can be specifically identified.

[0089] In this exemplary, the data names in the AV data is used to register the broadcasting sequence. Any other information which is capable of uniquely identifying the AV data and expressing the content of the broadcast program can be used as well.

[0090] In the embodiment, the information registered in the broadcast program service application information by the broadcast transmitting apparatus includes program information, broadcast information, service information, and processing information. Other information may be utilized as long as the information is capable of executing the service in the broadcast receiving apparatus.

#### Fifth Exemplary Embodiment

[0091] A fifth exemplary embodiment relates to an operation of deleting AV data of broadcast program by using the broadcast program service.

[0092] For example, suppose to present a service of deleting AV data of first CM of companies A to D as CM delete broadcast program service in a drama program (a) from 10:00 to 10:30.

[0093] As explained in the fourth exemplary embodiment, the transmitting side application information storing and managing means 106 of the broadcast transmitting apparatus 100 stores and manages the application information 701 about the drama program (a) from 10:00 to 10:30, created by the application information creating means 105.

[0094] The transmitting side service application storing and managing means 107 of the broadcast transmitting apparatus 100 stores and manages the CM delete broadcast program service application.

[0095] First, the operation of the broadcast transmitting apparatus for creating service information and processing information as CM delete broadcast program service application information, and storing in the broadcast receiving apparatus is explained below by referring to the flowchart in Fig. 19 and Figs. 1 and 7.

**[0096]** Step S8-1: To present CM delete broadcast program service in the drama program (a) from 10:00 to 10:30, same as in the fourth exemplary embodiment, before executing the CM delete broadcast program service, the broadcast transmitting apparatus 100 transmits a CM delete broadcast program service application processing program.

Step S8-2: It is stored in the receiving side service application storing and managing means 117 of the broadcast receiving apparatus 110.

Step S8-3: As shown in Fig. 7, the broadcast transmitting apparatus 100 reads in the application information 701 stored and managed in the transmitting side application information storing and managing means 106.

Step S8-4: To delete AV data of first CM of companies A to D, information A1, B1, C1, D1 of data name of AV data is registered as processing information. And the broadcast program service name "CM delete broadcast program service information" is registered as service information also. Then broadcast program service information 702 composed of this service information and processing information are added to the application information 701, and CM delete broadcast program service application information 708 is created, and stored in the transmitting side service application storing and managing means 107.

Step S8-5: Before execution of CM delete broadcast program service, the broadcast transmitting apparatus 100 transmits CM delete broadcast program service application information 708.

Step S8-6: It is stored in the receiving side service application storing and managing means 117 of the broadcast receiving apparatus 110.

**[0097]** Next, the operation of the broadcast receiving apparatus for deleting the stored AV data according to the application information is explained by referring to the flowchart in Fig. 20.

Step S9-1: The application information processing means 118 of the broadcast receiving apparatus 110 reads in the CM delete broadcast program service application information 708 stored and managed in the receiving side service application storing and managing means 117.

Step S9-2: The CM delete broadcast program service application processing program is executed according to the service information.

Step S9-3: The CM delete broadcast program service application processing program extracts A1, B1, C2, D1, a1, A1, B1, C2, D1, a2, A1, B1, C2, and D1 from the AV data stored and managed in the receiving side AV data storing and managing means 114, according to the broadcast information of the CM delete broadcast program service application infor-

mation 708.

Step S9-4: A1, B1, C1, D1 registered in the processing information of the CM delete broadcast program service application information 708 are deleted from the receiving side AV data storing and managing means 114.

**[0098]** Thus, in this embodiment, as the broadcast transmitting apparatus creates and transmits service application information for deleting AV data of broadcast program, the broadcast receiving apparatus executes service application, and extracts and deletes the corresponding AV data from the stored and managed AV data. Thus, the broadcast transmitting apparatus can delete the AV data being stored and managed in the broadcast receiving apparatus.

**[0099]** Accordingly, deletion of AV data being stored and managed in the broadcast receiving apparatus can be controlled at the broadcast transmitting apparatus.

#### Sixth Exemplary Embodiment

**[0100]** A sixth exemplary embodiment relates to an operation of creating and utilizing the user information of broadcast program service.

**[0101]** For example, when reproducing stored broadcast program in the drama program (a) from 10:00 to 10:30, this is a case of presenting CM one-time reproduction broadcast program service for reproducing the broadcast of a CM only once. Fig. 9 shows a program organization diagram of this program broadcast service.

**[0102]** As explained in the fourth exemplary embodiment, the transmitting side application information storing and managing means 106 of the broadcast transmitting apparatus 100 stores and manages the application information 701 about the drama program (a) from 10:00 to 10:30, created by the application information creating means 105.

**[0103]** The transmitting side service application storing and managing means 107 of the broadcast transmitting apparatus 100 stores and manages the CM one-time reproduction broadcast program service application.

**[0104]** First, the operation of the broadcast transmitting apparatus for creating service information and processing information as CM one-time reproduction broadcast program service application information, and storing in the broadcast receiving apparatus is explained below by referring to the flowchart in Fig. 19.

**[0105]** To present CM one-time reproduction broadcast program service in the drama program (a) from 10:00 to 10:30:

Step S8-1: Same as in the fourth exemplary embodiment, before executing the CM one-time reproduction broadcast program service, the broadcast transmitting apparatus 100 transmits a CM one-time reproduction broadcast program service application processing program.

Step S8-2: It is stored in the receiving side service application storing and managing means 117 of the broadcast receiving apparatus 110.

Step S8-3: As shown in Fig. 7, the broadcast transmitting apparatus 100 reads in the application information 701 stored and managed in the transmitting side application information storing and managing means 106.

Step S8-4: To present CM one-time reproduction broadcast program service, first, as initial values, reproduction start time of 0 (not reproduced) as processing information. The broadcast service name "CM one-time reproduction broadcast program service" is registered as service information. The broadcast program service information 702 composed of this service information and processing information are added to the application information 701. As a result CM one-time reproduction broadcast program service application information 709 is created, and stored in the transmitting side service application storing and managing means 107.

Step S8-5: Before execution of CM one-time reproduction broadcast program service, the broadcast transmitting apparatus 100 transmits CM one-time reproduction broadcast program service application information 709.

Step S8-6: It is stored in the receiving side service application storing and managing means 117 of the broadcast receiving apparatus 110.

**[0106]** Next, the operation of the broadcast receiving apparatus for presenting the broadcast program service by using the stored AV data according to the service application information is explained by referring to the flowchart in Fig. 20 and Fig. 9. Reference numeral 901 in Fig. 9 shows a program organization that has been received and stored for the first time.

Step S9-1: The application information processing means 118 of the broadcast receiving apparatus 110 reads in the CM one-time reproduction broadcast program service application information 709 stored and managed in the receiving side service application storing and managing means 117.

Step S9-2: The CM one-time reproduction broadcast program service application processing program is executed according to the service information.

Step S9-3: The CM one-time reproduction broadcast program service application processing program extracts A1, B1, C1, D1, a1, A1, B2, C2, D2, a2, A1, B3, C2, D1, and D2 from the AV data stored and managed in the receiving side AV data storing and managing means 114, according to the broadcast information of the CM one-time reproduction broadcast program service application information 709.

Step S9-4: As in first broadcast 902 in Fig. 9, referring to the processing information of the CM one-time reproduction broadcast program service application

information 709, since the reproduction start time is 0 (not reproduced), the broadcast is reproduced from the beginning in the sequence of A1, B1, C1, D1, a1, A1, B2, C2, D2, a2, A1, B3, C2, D1, and D2.

**[0107]** Fig. 21 is a flowchart showing the flow of process of operation of the broadcast receiving apparatus for creating and utilizing the user information of broadcast program service, and the operation is described below while referring also to Figs. 1, 7, and 9 to 11.

Step S10-1: As shown in Fig. 9, in the drama program (a) being on air from 10:00 to 10:30, for example, when the viewer stops viewing at 10:10:00 in the midst of viewing A1, B1, C1, D1, and a1, the CM one-time reproduction broadcast program service application processing program converts the reproduction end time 10:10:00 into the broadcast process time of AV data a1 of the drama program (a). That is, (10:10:00 - 10:02:00 (on-air start time of a1)) min. = 8min. = 480 sec. is obtained.

Step S10-2: Next, as shown in Fig. 10, in storing management information 1001 of AV data, A1, B1, C1, D1 of sent CM, "the CM one-time reproduction broadcast program service" of broadcast program service name is registered as user information, and storing management information 1002 is created.

Step S10-3: Further, as shown in Fig. 11, in CM one-time reproduction broadcast program service application information 1101, 480 sec converted from the reproduction end time as mentioned above is registered as reproduction start time in processing information, and CM one-time reproduction broadcast program service application information 1102 is created.

Step S10-4: Again, the CM one-time reproduction broadcast program service application processing program is executed.

Step S10-5: Then, the storing management information 1002 registered in the AV data stored and managed in the receiving side AV data storing and managing means 114 is read in.

Step S10-6: From the AV data stored and managed in the receiving side AV data storing and managing means 114, removing A1, B1, C1, D1 having the user information of CM one-time reproduction broadcast program service registered in the storing management information 1002, a1, B2, C2, D2, a2, B3, C2, D2 are extracted according to the broadcast information of the CM one-time reproduction broadcast program service application information 1102.

Step S10-7: As in second broadcast 903 in Fig. 9, referring to the processing information of the CM one-time reproduction broadcast program service application information 1102, since the reproduction start time is 480 of a1, reproduction is started from 480 sec of AV data a1 of the drama program (a), and a1, B2, C2, D2, a2, B3, C2, D2 are reproduced se-

quentially.

**[0108]** However, again, when the viewer stops viewing at 10:20:00 while reviewing a1, B2, C2, D2, and a2, the CM one-time reproduction broadcast program service application processing program converts the reproduction end time 10:20:00 into broadcast process time of AV data a2 of the drama program (a). That is,  $(10:20:00 - 10:15:30 \text{ (on-air start time of a2)}) \times 60 \text{ minutes} = 270 \text{ sec}$  is obtained (step S10-1).

**[0109]** Next, as shown in Fig. 10, in storing management information 1002 of AV data, B2, C2, D2 of sent CM, "the CM one-time reproduction broadcast program service" of broadcast program service name is registered as user information, and storing management information 1003 is created (step S10-2).

**[0110]** Further, as shown in Fig. 11, in CM one-time reproduction broadcast program service application information 1102, 270 sec converted from the reproduction end time as mentioned above is registered as reproduction start time in processing information, and CM one-time reproduction broadcast program service application information 1103 is created (step S10-3).

**[0111]** Again, the CM one-time reproduction broadcast program service application processing program is executed (step S10-4), and then the storing management information 1003 registered in the AV data stored and managed in the receiving side AV data storing and managing means 114 is read in (step S10-5).

**[0112]** From the AV data stored and managed in the receiving side AV data storing and managing means 114, removing A1, B1, C1, D1, B2, C2, D2 having the user information of CM one-time reproduction broadcast program service registered in the storing management information 1003, a2 and B3 are extracted according to the broadcast information of the CM one-time reproduction broadcast program service application information 1103 (step S10-6).

**[0113]** As in third broadcast 903 in Fig. 9, referring to the processing information of the CM one-time reproduction broadcast program service application information 1103, since the reproduction start time is 270 of a2, reproduction is started from 270 sec of AV data a2 of the drama program (a), and a2 and B3 are reproduced sequentially (step S10-7).

**[0114]** Thus, in the embodiment, the user information of the service application is registered in the storing management information of the AV data stored and managed in the broadcast receiving apparatus, and the service application is executed according to this user information. Hence, the AV data stored and managed in the broadcast receiving apparatus can be utilized efficiently depending on the situation of use of the service application.

**[0115]** In the embodiment, meanwhile, as the user information registered in the storing management information of AV data, the service name is registered, but not limited to this, any other information capable of specifically identifying the service can be used similarly.

## Seventh Exemplary Embodiment

**[0116]** A seventh exemplary embodiment relates to an operation of deleting AV data of broadcast program by utilizing the user information of broadcast program service.

**[0117]** For example, in the CM one-time reproduction broadcast program service described in the sixth exemplary embodiment, when the second broadcast is terminated, the sent CM is deleted, that is, a case of presenting a sent CM delete broadcast program service is explained below.

**[0118]** First of all, the operation of the broadcast transmitting apparatus for creating service application information is described by referring to the flowchart in Fig. 19.

**[0119]** As explained in the fourth exemplary embodiment, the transmitting side application information storing and managing means 106 of the broadcast transmitting apparatus 100 stores and manages the application information 701 about the drama program (a) from 10:00 to 10:30, created by the application information creating means 105.

**[0120]** The transmitting side service application storing and managing means 107 of the broadcast transmitting apparatus 100 stores and manages the sent CM delete broadcast program service application.

**[0121]** For example, the broadcast transmitting apparatus creates service information and processing information as the sent CM delete broadcast program service application information, and stores in the broadcast receiving apparatus in the following operation.

Step S8-1: To present the sent CM delete broadcast program service in the drama program (a) from 10:00 to 10:30, same as in the fourth exemplary embodiment, before executing the sent CM delete broadcast program service, the broadcast transmitting apparatus 100 transmits a sent CM delete broadcast program service application processing program.

Step S8-2: It is stored in the receiving side service application storing and managing means 117 of the broadcast receiving apparatus 110.

Step S8-3: As shown in Fig. 7, the broadcast transmitting apparatus 100 reads in the application information 701 stored and managed in the transmitting side application information storing and managing means 106.

Step S8-4: To delete AV data of sent CM of companies A to D, group identifiers A, B, C, D representing companies presenting CM of AV data as processing information, at first the broadcast service name of "sent CM delete broadcast program service" is registered as the service information. Then the broadcast program service information 702 composed of this service information and processing information are added to the application information 701. As a result sent CM delete broadcast program service ap-

plication information 710 is created, and stored in the transmitting side service application storing and managing means 107.

Step S8-5: Before execution of sent CM delete broadcast program service, the broadcast transmitting apparatus 100 transmits sent CM delete broadcast program service application information 710.

Step S8-6: It is stored in the receiving side service application storing and managing means 117 of the broadcast receiving apparatus 110.

**[0122]** Next, the operation of the broadcast receiving apparatus for deleting the AV data of broadcast program by using the user information of broadcast program service according to the application information is described below. Fig. 22 is a flowchart showing the flow of process of the operation of the broadcast receiving apparatus for deleting the stored AV data by utilizing the user information of the broadcast program service according to the application information.

Step S11-1: For example, in order to execute the sent CM delete broadcast program service when the second broadcast is terminated in the CM one-time reproduction broadcast program service explained in the sixth exemplary embodiment, the application information processing means 118 of the broadcast receiving apparatus 110 reads in the sent CM delete broadcast program service application information 710 stored and managed in the receiving side service application storing and managing means 116, and executes the sent CM delete broadcast program service application processing program according to the service information.

Step S11-2: The sent CM delete broadcast program service application processing program extracts A1, B1, C1, D1, a1, A1, B2, C2, D2, a2, A1, B3, C2, D1, and D2 from the AV data stored and managed in the receiving side AV data storing and managing means 114, according to the broadcast information of the sent CM delete broadcast program service application information 710.

Step S11-3: Referring to the user information registered in the storing management information 1003 of AV data,

Step S11-4: From A1, B1, C1, a1, D1, a2, B2, C2, and D2 in which the user information is registered, the AV data, A1, B1, C1, D1, B2, C2, and D2 of group identifiers A, B, C, D registered in the processing information of the sent CM delete broadcast program service application information 710 are extracted.

Step S11-5: They are deleted.

**[0123]** Thus, in the embodiment, the AV data stored and managed in the broadcast receiving apparatus is deleted according to the user information of the service application. In the broadcast receiving apparatus, the stored and managed AV data can be deleted efficiently

depending on the situation of use of the service application.

**[0124]** In the embodiment, meanwhile, the broadcast transmitting apparatus registers the program information, broadcast information, service information, and processing information in the broadcast program service application information, but the information to be registered is not limited to them alone, and any information capable of executing the, service in the broadcasting receiving apparatus can be similarly registered. The information of the AV data to be deleted is specified by the information of group identifier, but not limited to this, any other information can be used as far as the AV data can be identified.

#### Eighth Exemplary Embodiment

**[0125]** An eighth exemplary embodiment relates to an operation of storing AV data of broadcast program by utilizing broadcast program service.

**[0126]** For example, the following is to explain a case of presenting an automatic tuning storing broadcast program service for starting storing AV data of broadcast program by tuning to a specified channel at a designated time.

**[0127]** Fig. 23 is a flowchart showing the process of flow of operation of the broadcast transmitting apparatus and its receiving apparatus for storing AV data of broadcast program by utilizing the stored broadcast program service, and its operation is described below while referring also to Fig. 7.

**[0128]** As explained in the fourth exemplary embodiment, the transmitting side application information storing and managing means 106 of the broadcast transmitting apparatus 100 stores and manages the application information 701 about the drama program (a) from 10:00 to 10:30, created by the application information creating means 105.

**[0129]** The transmitting side service application storing and managing means 107 of the broadcast transmitting apparatus 100 stores and manages the automatic tuning storing broadcast program service application. The broadcast transmitting apparatus creates service information and processing information as the automatic tuning storing broadcast program service application information, and stores in the broadcast receiving apparatus in the following operation.

Step S12-1: To present the automatic tuning storing broadcast program service in the drama program (a) from 10:00 to 10:30, same as in the fourth exemplary embodiment, before executing the automatic tuning storing broadcast program service, the broadcast transmitting apparatus 100 transmits an automatic tuning storing broadcast program service application processing program, and it is stored in the receiving side service application storing and managing means 117 of the broadcast receiving apparatus

110.

Step S12-2: To store automatically the drama program (a) of ch1 from 10:00:00 to 10:30:00 on January 1, 1999, as shown in Fig. 7, the broadcast transmitting apparatus 100 reads in the application information 701 stored and managed in the transmitting side application information storing and managing means 106, registers the processing information by specifying the tuning channel to be ch1, and on-air start time to be 10:00:00, January 1, 1999. Further the broadcast program service name of "the automatic tuning storing broadcast program service" is registered as the service information. The broadcast program service information 702 composed of this service information and processing information are added to the application information 701. As a result automatic tuning storing broadcast program service application information 711 is created, and stored in the transmitting side service application storing and managing means 107.

Step S12-3: Before execution of automatic tuning storing broadcast program service, the broadcast transmitting apparatus 100 transmits the automatic tuning storing broadcast program service application information 711, and it is stored in the receiving side service application storing and managing means 117 of the broadcast receiving apparatus 110.

Step S12-4: Consequently, the application information processing means 118 of the broadcast receiving apparatus 110 reads in the automatic tuning storing broadcast program service application information 711.

Step S12-5: The automatic tuning storing broadcast program service application processing program is executed according to the service information.

Step S12-6: The automatic tuning storing broadcast program service application processing program tunes to ch1 before the on-air time of 10:00:00, January 1, 1999, according to the on-air time registered as processing information in the automatic tuning storing broadcast program service application information 711.

Step S12-7: Thereafter, as explained in the first exemplary embodiment, the AV data of the drama program (a) is stored in the broadcast receiving apparatus 110.

**[0130]** Thus, according to the embodiment, when the application information and service application are transmitted from the broadcast transmitting apparatus, the broadcast receiving apparatus executes the service application according to the application information, tunes to the program automatically, and stores the AV data of the broadcast program. Therefore, in the broadcast receiving apparatus, it seems as if the AV data of the non-tuned broadcast program can be stored.

**[0131]** In the embodiment, the broadcast transmitting apparatus registers the program information, broadcast

information, service information, and processing information in the broadcast program service application information, but the information to be registered is not limited to them alone, and any information capable of executing the service in the broadcasting receiving apparatus can be similarly registered.

**[0132]** In the embodiment, meanwhile, the tuning time is before the on-air time, but not limited to this, it may be set and changed freely how far before the on-air start time.

**[0133]** Also in the invention, it is explained to tune in the power ON state of the broadcast receiving apparatus, but not limited to this, once turning off the power, the power may be turned on automatically when reaching the tuning time, and other various free setting or change may be possible.

## Claims

1. A broadcast transmitting apparatus for transmitting a broadcast program composed of AV data containing at least video or audio and reference information, comprising at least:

- a) means (101) for storing and managing AV data, said means managing said AV data and attribute data thereof, the attribute data including a data identifier for identifying the AV data, and data parameters for managing the AV data,
- b) means (102) for managing an on-air schedule of AV data to be transmitted, the on-air schedule identifying AV data to be transmitted by means of the data identifier,
- c) means (103) for creating reference information,
- d) means (104) for storing and managing the reference information, and
- e) means for transmitting the AV data and the reference information in a broadcast,

**characterized in that** the reference information comprises command information for commanding, from the transmitter apparatus, a selective AV data storing operation to be performed by a receiver apparatus, wherein said reference information creating means (103) is configured to

- 1) read the attribute data of AV data from said AV data storing and managing means,
- 2) read the schedule information from said schedule managing means,
- 3) create AV data storing control information representing said command information, the AV data storing control information controlling the selective recording operation steps to be performed by a receiver apparatus,



- 4) create AV storage management information, including information from the attribute information, to enable management of the AV data at a receiver side when stored by a receiver according to the AV data storing control information. 5
2. The broadcast transmitting apparatus of claim 1, wherein said reference information creating means (103) changes the reference information according to the schedule information when the schedule of the broadcast program is changed. 10
3. The broadcast transmitting apparatus of claim 1, wherein said schedule managing means (102) changes the schedule information when the schedule of the broadcast program is changed, and creates a schedule of the broadcast program to terminate the broadcast within the broadcasting time frame. 15
4. The broadcast transmitting apparatus of claim 1, wherein said command information is storing control command, and is generated from at least any one of video information, time information, code information, audio information, and signal information. 20
5. The broadcast transmitting apparatus of claim 1, wherein said command information is a storing control command for specifying at least any one of start of storing, its end, preparation for storing, pause of storing, and restart of storing. 25
6. The broadcast transmitting apparatus of any one of claims 1 to 5, further comprising either application information creating means (105) for creating application information showing method of use of the AV data in the service application for executing broadcast program service from the reference information, or application information storing and managing means (106) for storing and managing the application information and controlling its transmission. 30
7. The broadcast transmitting apparatus of claim 6, further comprising service application storing and managing means (107) for storing and managing the service application and controlling its transmission, and transmitting means (108) for transmitting the application information issued from said application information storing and managing means, and service application issued from said service application storing and managing means. 35
8. The broadcast transmitting apparatus of any preceding claim, wherein the data parameters comprise data size, duration, update information and a group identifier for identifying a group associated with the AV data. 40
9. The broadcast transmitting apparatus of claim 8, wherein the storage management information created by the reference information creating means (103) comprises a data name created from the group identifier, the update information, the duration and air-start time. 45
10. A broadcast receiving apparatus for receiving a broadcast program from the broadcast transmitting apparatus of claim 1, comprising:
- receiving means (111) for receiving the broadcast program and separating and extracting into AV data and reference information, AV decoding means (112) for decoding the AV data by storing into an internal buffer memory, AV reproducing means (113) for reproducing the AV data, **characterized in that** the broadcast receiving apparatus is responsive to the command information of the reference information, to control storing of the AV data when commanded by the command information, the broadcast receiving apparatus further comprising:
- reference information processing means (115) for controlling storing of the AV data according to storing control information of the reference information, and AV data storing and managing means (114) for storing and managing the AV data together with storing management information of the reference information. 50
11. The broadcast receiving apparatus of claim 10, wherein the AV data storing and managing means (114) determines whether it stores the AV data or not, when the storing control command is issued, and the AV data storing and managing means instructs to store the AV data if the receiving apparatus determines to store the AV data. 55
12. The broadcast receiving apparatus of claim 11 wherein the apparatus determines whether it stores the AV data or not by referring if the receiving side AV data storing and managing means possesses enough capacity to store said AV data.
13. The broadcast receiving apparatus of claim 11, wherein the apparatus determines whether it stores the AV data or not by referring to the AV data storing management information to know if the AV data is already stored in the AV data storing and managing means.
14. The broadcast receiving apparatus of claim 11, wherein when the storing control command instructs storing at the receiving side, the storing management

information of the AV data is referred to, update information is registered in the AV data already stored in the AV data storing and managing means, and the previous data is deleted, and new AV data is stored.

15. A broadcast receiving apparatus according to claim 10 and configured for receiving a program transmitted from the broadcast transmitting apparatus of claim 6, further comprising at least:

receiving means (111) for separating and extracting at least the application information and service application received from the broadcast transmitting apparatus, application information storing and managing means for storing and managing the application information, service application storing and managing means (117) for storing and managing the service application, and application information processing means (118) for extracting the corresponding data from the AV data stored and managed in said AV data storing and managing means according to the application information, wherein said application information processing means (118) executes the service application according to the application information.

16. The broadcast receiving apparatus of claim 15, wherein said application information processing means (118) executes the service application according to the application information, and deletes the corresponding data from the AV data stored and managed in said AV data storing and managing means.

17. The broadcast receiving apparatus of claim 15, wherein said application information processing means (118) registers the user information of the service application in the storing management information of the AV data.

18. The broadcast receiving apparatus of claim 17, wherein said application information processing means (118) executes the service application according to the user information of the service application.

19. The broadcast receiving apparatus of claim 18, wherein said application information processing means (118) deletes the corresponding data from the AV data stored and managed in said AV data storing and managing means according to the user information of the service application.

20. The broadcast receiving apparatus of claim 17, wherein said application information processing means (118) extracts a specified broadcast program according to the application information, and stores

the AV data corresponding to the broadcast program.

21. A broadcast transmitting method for transmitting a broadcast program composed of AV data containing at least video or audio and reference information, comprising at least:

- a) a step of storing and managing AV data and an attribute data thereof, the attribute data including a data identifier for identifying the AV data, and data parameters for managing the AV data
- b) a step of managing an on-air schedule of AV data to be transmitted, the on-air schedule identifying AV data to be transmitted by means of the data identifier,
- c) a step of creating reference information,
- d) a step of storing and managing the reference information, and
- e) a step of transmitting the AV data and the reference information in a broadcast,

**characterized in that** the reference information comprises command information for commanding, from the transmitter apparatus, a selective AV data storing operation to be performed by a receiver apparatus, wherein said reference information creating step further includes

- 1) a step of reading the attribute data of AV data from said AV data storing and managing means,
- 2) a step of reading the schedule information from said schedule managing means,
- 3) a step of creating AV data storing control information representing said command information, the AV data storing control information controlling the selective recording operation steps to be performed by a receiver apparatus,
- 4) a step of creating AV storage management information, including information from the attribute information, to enable management of the AV data at a receiver side when stored by a receiver according to the AV data storing control information.

22. The broadcast transmitting method of claim 21, further comprising either an application information creating step of creating application information showing method of use of the AV data in the service application for executing broadcast program service from the reference information, and an application information storing and managing step of storing and managing the application information and controlling its transmission.

23. The broadcast transmitting method of claim 21 or

22, wherein the data parameters comprise data size, duration, update information and a group identifier for identifying a group associated with the AV data.

24. The broadcast transmitting method of claim 23, wherein the storage management information created by the reference information creating step comprises a data name created from the group identifier, the update information, the duration and air-start time.

25. A broadcast receiving method for receiving a broadcast program transmitted in the broadcast transmitting method of claim 21, comprising at least:

a receiving step of receiving the broadcast program and separating and extracting the AV data and reference information,  
**characterized by:**

a reference information processing step of processing command information of the reference information, the command information commanding whether or not an item of AV data is to be stored upon reception, and an AV data storing and managing responsive to the command information for step of storing and managing the AV data together with storing management information of the reference information, wherein said AV data storing and managing step controls the reproduction of the stored AV data.

26. A broadcast receiving method according to claim 25 and configured for receiving a broadcast program transmitted in the broadcast transmitting method of claim 22, comprising at least:

a receiving step of separating and extracting the received application information and service application, an application information storing and managing step of storing and managing the application information, a service application storing and managing step of storing and managing the service application, and an application information processing step of extracting the corresponding data from the AV data stored and managed at the AV data storing and managing step according to the application information, wherein said application information processing step executes the service application according to the application information.

## Patentansprüche

1. Rundfunk-Sendevorrichtung zum Senden eines

Rundfunkprogramms, das aus Audio-Nideodaten (AV-Daten) besteht, die mindestens Video- oder Audio- und Bezugsinformationen enthalten, mit mindestens:

- a) Mitteln (101) zum Speichern und Verwalten von AV-Daten, wobei die Mittel die AV-Daten und deren Attributdaten verwalten, wobei die Attributdaten einen Daten-Identifikator zum Identifizieren der AV-Daten und Datenparameter zum Verwalten der AV-Daten umfassen;
- b) Mitteln (102) zum Verwalten eines Auf-Sendung-Verzeichnisses von zu sendenden AV-Daten, wobei das Auf-Sendung-Verzeichnis zu sendende AV-Daten mit Hilfe des Daten-Identifikators identifiziert;
- c) Mitteln (103) zum Erzeugen von Bezugsinformationen;
- d) Mitteln (104) zum Speichern und Verwalten der Bezugsinformationen und
- e) Mitteln zum Senden der AV-Daten und der Bezugsinformationen in einer Sendung,

**dadurch gekennzeichnet, dass** die Bezugsinformationen Befehlsinformationen zum Befehlen einer von einer Empfangsvorrichtung auszuführenden selektiven AV-Daten-Speicheroperation von der Sendevorrichtung aus umfassen, wobei die Bezugsinformationen-Erzeugungsmittel (103) so konfiguriert sind, dass sie

- 1) die Attributdaten der AV-Daten aus den AV-Daten-Speicher- und -Verwaltungsmitteln lesen,
- 2) die Verzeichnis-Informationen aus den Verzeichnisverwaltungsmitteln lesen,
- 3) AV-Daten-Speichersteuerinformationen, die die Befehlsinformationen darstellen, erzeugen, wobei die AV-Daten-Speichersteuerinformationen die von einer Empfangsvorrichtung auszuführenden selektiven Aufzeichnungsoperationsschritte steuern, und
- 4) AY-Speicherverwaltungsinformationen, die Informationen aus den Attribut-Informationen umfassen, erzeugen, um die Verwaltung der AV-Daten auf einer Empfangsseite zu ermöglichen, wenn sie von einem Empfänger entsprechend den AV-Daten-Speichersteuerinformationen gespeichert werden.

2. Rundfunk-Sendevorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Bezugsinformationen-Erzeugungsmittel (103) die Bezugsinformationen entsprechend den Verzeichnis-Informationen ändern, wenn das Verzeichnis des Rundfunkprogramms geändert wird.

3. Rundfunk-Sendevorrichtung nach Anspruch 1, **da-**

- durch gekennzeichnet, dass** die Verzeichnisverwaltungsmittel (102) die Verzeichnis-Informationen ändern, wenn das Verzeichnis des Rundfunkprogramms geändert wird, und ein Verzeichnis des Rundfunkprogramms erzeugen, um die Sendung innerhalb des Sendezeitrahmens zu beenden.
4. Rundfunk-Sendevorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Befehlsinformationen einen Speichersteuerbefehl beinhalten und aus mindestens einem Element aus der Gruppe Video-Informationen, Zeit-Informationen, Code-Informationen, Audio-Informationen und Signal-Informationen erzeugt werden.
5. Rundfunk-Sendevorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Befehlsinformationen einen Speichersteuerbefehl zum Festlegen mindestens eines Elements aus der Gruppe Speicherstart, Speicher-Ende, Vorbereitung zum Speichern, Unterbrechung des Speicherns und Speicher-Neustart beinhalten.
6. Rundfunk-Sendevorrichtung nach einem der Ansprüche 1 bis 5, die weiterhin entweder Anmeldungs-Informationen-Erzeugungsmittel (105) zum Erzeugen von Anmeldungsinformationen, die ein Verfahren zur Verwendung der AV-Daten bei der Dienstanmeldung zum Ausführen eines Rundfunkprogrammdienstes beinhalten, aus den Bezugsinformationen oder Anmeldungsinformationen-Speicher- und -Verwaltungsmittel (106) zum Speichern und Verwalten der Anmeldungsinformationen und zum Steuern ihrer Übertragung aufweist.
7. Rundfunk-Sendevorrichtung nach Anspruch 6, die weiterhin Dienstanmeldungs-Speicher- und -Verwaltungsmittel (107) zum Speichern und Verwalten der Dienstanmeldung und zum Steuern ihrer Übertragung und Sendemittel (108) zum Senden der von den Anmeldungsinformationen-Speicher- und -Verwaltungsmitteln ausgegebenen Anmeldungsinformationen und der von den Dienstanmeldungs-Speicher- und -Verwaltungsmitteln ausgegebenen Dienstanmeldung aufweist.
8. Rundfunk-Sendevorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Datenparameter eine Datengröße, eine Dauer, Aktualisierungsinformationen und einen Gruppen-Identifikator zum Identifizieren einer mit den AV-Daten assoziierten Gruppe umfassen.
9. Rundfunk-Sendevorrichtung nach Anspruch 8, **dadurch gekennzeichnet, dass** die von den Bezugsinformationen-Erzeugungsmitteln (103) erzeugten Speicherverwaltungsinformationen einen aus dem Gruppen-Identifikator erzeugten Datennamen, die Aktualisierungsinformationen, die Dauer und eine Sendebeginnzeit umfassen.
10. Rundfunk-Empfangsvorrichtung zum Empfangen eines Rundfunkprogramms von der Rundfunk-Sendevorrichtung nach Anspruch 1 mit:
- Empfangsmitteln (111) zum Empfangen des Rundfunkprogramms und zum Trennen in und Gewinnen von AV-Daten und Bezugsinformationen;  
AV- Decodiermitteln (112) zum Decodieren der AV-Daten durch Speichern in einem internen Pufferspeicher; und  
AV- Wiedergabemitteln (113) zum Wiedergeben der AV-Daten,
- dadurch gekennzeichnet, dass** die Rundfunk-Empfangsvorrichtung auf die Befehlsinformationen der Bezugsinformationen reagiert, um die Speicherung der AV-Daten zu steuern, wenn es von den Befehlsinformationen befohlen wird, wobei die Rundfunk-Empfangsvorrichtung weiterhin Folgendes aufweist:
- Bezugsinformationen- Verarbeitungsmittel (115) zum Steuern der Speicherung der AV-Daten entsprechend den Speichersteuerinformationen der Bezugsinformationen und  
AV-Daten-Speicher- und -Verwaltungsmittel (114) zum Speichern und Verwalten der AV-Daten zusammen mit Speicherverwaltungsinformationen der Bezugsinformationen.
11. Rundfunk-Empfangsvorrichtung nach Anspruch 10, **dadurch gekennzeichnet, dass** die AV-Daten-Speicher- und -Verwaltungsmittel (114) bestimmen, ob sie die AV-Daten speichern sollen oder nicht, wenn der Speichersteuerbefehl ausgegeben wird, und die AV-Daten-Speicher- und -Verwaltungsmittel befehlen, die AV-Daten zu speichern, wenn die Empfangsvorrichtung bestimmt, dass die AV-Daten gespeichert werden sollen.
12. Rundfunk-Empfangsvorrichtung nach Anspruch 11, **dadurch gekennzeichnet, dass** die Vorrichtung durch Referenzieren bestimmt, ob sie die AV-Daten speichern soll oder nicht, wenn die empfangsseitigen AV-Daten-Speicher- und -Verwaltungsmittel ausreichend Kapazität zum Speichern der AV-Daten haben.
13. Rundfunk-Empfangsvorrichtung nach Anspruch 11, **dadurch gekennzeichnet, dass** die Vorrichtung durch Referenzieren der AV-Daten-Speicherverwaltungsinformationen bestimmt, ob sie die AV-Daten speichern soll oder nicht, um zu ermitteln, ob die AV-Daten bereits in den AV-Daten-Speicher- und -Ver-

waltungsmitteln gespeichert sind.

14. Rundfunk-Empfangsvorrichtung nach Anspruch 11, **dadurch gekennzeichnet, dass**, wenn der Speichersteuerbefehl das Speichern auf der Empfangsseite befiehlt, die Speicherverwaltungsinformationen der AV-Daten referenziert werden, Aktualisierungsinformationen in den AV-Daten, die bereits in den AV-Daten-Speicher- und

- Verwaltungsmitteln gespeichert sind, registriert werden und die früheren Daten gelöscht werden und neue AV-Daten gespeichert werden.

15. Rundfunk-Empfangsvorrichtung nach Anspruch 10 und die zum Empfangen eines von der Rundfunk-Sendevorrichtung nach Anspruch 6 gesendeten Programms konfiguriert ist, mit weiterhin mindestens Folgendem:

Empfangsmitteln (111) zum Trennen und Gewinnen mindestens der Anmeldungsinformationen und der Dienstanmeldung, die von der Rundfunk-Sendevorrichtung empfangen werden;  
Anmeldungsinformationen-Speicher- und -Verwaltungsmitteln zum Speichern und Verwalten der Anmeldungsinformationen;  
Dienstanmeldungs-Speicher- und -Verwaltungsmitteln (117) zum Speichern und Verwalten der Dienstanmeldung; und  
Anmeldungsinformationen- Verarbeitungsmitteln (119) zum Gewinnen der entsprechenden Daten aus den AV-Daten, die in den AV-Daten-Speicher- und -Verwaltungsmitteln gespeichert und verwaltet werden, entsprechend den Anmeldungsinformationen, wobei die Anmeldungsinformationen-Verarbeitungsmittel (118) die Dienstanmeldung entsprechend den Anmeldungsinformationen ausführen.

16. Rundfunk-Empfangsvorrichtung nach Anspruch 15, **dadurch gekennzeichnet, dass** die Anmeldungsinformationen-Verarbeitungsmittel (118) die Dienstanmeldung entsprechend den Anmeldungsinformationen ausführen und die entsprechenden Daten aus den AV-Daten löschen, die in den AV-Daten-Speicher- und -Verwaltungsmitteln gespeichert und verwaltet werden.

17. Rundfunk-Empfangsvorrichtung nach Anspruch 15, **dadurch gekennzeichnet, dass** die Anmeldungsinformationen-Verarbeitungsmittel (118) die Benutzerinformationen der Dienstanmeldung in den Speicherverwaltungsinformationen der AV-Daten registrieren.

18. Rundfunk-Empfangsvorrichtung nach Anspruch 17, **dadurch gekennzeichnet, dass** die Anmeldungsinformationen-Verarbeitungsmittel (118) die Dienstanmeldung entsprechend den Benutzerinformationen der Dienstanmeldung ausführen.

19. Rundfunk-Empfangsvorrichtung nach Anspruch 18, **dadurch gekennzeichnet, dass** die Anmeldungsinformationen-Verarbeitungsmittel (118) die entsprechenden Daten aus den AV-Daten, die in den AV-Daten-Speicher- und -Verwaltungsmitteln gespeichert und verwaltet werden, entsprechend den Benutzerinformationen der Dienstanmeldung löschen.

20. Rundfunk-Empfangsvorrichtung nach Anspruch 17, **dadurch gekennzeichnet, dass** die Anmeldungsinformationen-Verarbeitungsmittel (118) ein festgelegtes Rundfunkprogramm entsprechend den Anmeldungsinformationen gewinnen und die dem Rundfunkprogramm entsprechenden AV-Daten speichern.

21. Rundfunk-Sendeverfahren zum Senden eines Rundfunkprogramms, das aus AV-Daten besteht, die mindestens Video- oder Audio- und Bezugsinformationen enthalten, mit mindestens:

- a) einem Schritt des Speicherns und Verwaltens von AV-Daten und deren Attributdaten, wobei die Attributdaten einen Daten-Identifikator zum Identifizieren der AV-Daten und Datenparameter zum Verwalten der AV-Daten umfassen;
- b) einem Schritt des Verwaltens eines Auf-Sendung-Verzeichnisses von zu sendenden AV-Daten, wobei das Auf-Sendung-Verzeichnis zu sendende AV-Daten mit Hilfe des Daten-Identifikators identifiziert;
- c) einem Schritt des Erzeugens von Bezugsinformationen;
- d) einem Schritt des Speicherns und Verwaltens der Bezugsinformationen und
- e) einem Schritt des Sendens der AV-Daten und der Bezugsinformationen in einer Sendung,

**dadurch gekennzeichnet, dass** die Bezugsinformationen Befehlsinformationen zum Befehlen einer von einer Empfangsvorrichtung auszuführenden selektiven AV-Daten-Speicheroperation von der Sendevorrichtung aus umfassen, wobei der Bezugsinformationen-Erzeugungsschritt weiterhin Folgendes umfasst:

- 1) einen Schritt des Lesens der Attributdaten der AV-Daten aus den AV-Daten-Speicher- und -Verwaltungsmitteln;
- 2) einen Schritt des Lesens der Verzeichnis-Informationen aus den Verzeichnisverwaltungs-

mitteln;

3) einen Schritt des Erzeugens von AV-Daten-Speichersteuerinformationen, die die Befehlsinformationen darstellen, wobei die AV-Daten-Speichersteuerinformationen die von einer Empfangsvorrichtung auszuführenden selektiven Aufzeichnungsoperationsschritte steuern; und

4) einen Schritt des Erzeugens von AV-Daten-Speicherverwaltungsinformationen, die Informationen aus den Attribut-Informationen umfassen, um die Verwaltung der AV-Daten auf einer Empfangsseite zu ermöglichen, wenn sie von einem Empfänger entsprechend den AV-Daten-Speichersteuerinformationen gespeichert werden.

22. Rundfunk-Sendeverfahren nach Anspruch 21, das weiterhin entweder einen Anmeldungsinformationen-Erzeugungsschritt des Erzeugens von Anmeldungsinformationen, die ein Verfahren zur Verwendung der AV-Daten bei der Dienstanmeldung zum Ausführen eines Rundfunkprogrammdienstes beinhalten, aus den Bezugsinformationen oder einen Anmeldungsinformationen-Speicher- und -Verwaltungsschritt des Speicherns und Verwaltens der Anmeldungsinformationen und des Steuerns ihrer Übertragung aufweist.

23. Rundfunk-Sendeverfahren nach Anspruch 21 oder 22, **dadurch gekennzeichnet, dass** die Datenparameter eine Datengröße, eine Dauer, Aktualisierungsinformationen und einen Gruppen-Identifikator zum Identifizieren einer mit den AV-Daten assoziierten Gruppe umfassen.

24. Rundfunk-Sendeverfahren nach Anspruch 23, **dadurch gekennzeichnet, dass** die von dem Bezugsinformationen-Erzeugungsschritt erzeugten Speicherverwaltungsinformationen einen aus dem Gruppen-Identifikator erzeugten Datennamen, die Aktualisierungsinformationen, die Dauer und eine Sendebeginnzeit umfassen.

25. Rundfunk-Empfangsverfahren zum Empfangen eines Rundfunkprogramms, das in dem Rundfunk-Sendeverfahren nach Anspruch 21 gesendet wird, mit mindestens:

einem Empfangsschritt des Empfangens des Rundfunkprogramms und des Trennens und Gewinnens der AV-Daten und Bezugsinformationen, **gekennzeichnet durch** einen Bezugsinformationen-Verarbeitungsschritt des Verarbeitens von Befehlsinformationen der Bezugsinformationen, wobei die Befehlsinformationen befehlen, ob eine Einheit der AV-Daten bei Empfang gespeichert werden soll

oder nicht, und

eine AV-Daten-Speicherung und -Verwaltung in Reaktion auf die Befehlsinformationen für den Schritt des Speicherns und Verwaltens der AV-Daten zusammen mit Speicherverwaltungsinformationen der Bezugsinformationen, wobei der AV-Daten-Speicher- und -Verwaltungsschritt die Wiedergabe der gespeicherten AV-Daten steuert.

26. Rundfunk-Empfangsverfahren nach Anspruch 25 und das zum Empfangen eines in dem Rundfunk-Sendeverfahren nach Anspruch 22 gesendeten Rundfunkprogramms konfiguriert ist, mit mindestens Folgendem:

einem Empfangsschritt zum Trennen und Gewinnen der empfangenen Anmeldungsinformationen und Dienstanmeldung;  
einem Anmeldungsinformationen-Speicher- und -Verwaltungsschritt des Speicherns und Verwaltens der Anmeldungsinformationen;  
einem Dienstanmeldungs-Speicher- und -Verwaltungsschritt des Speicherns und Verwaltens der Dienstanmeldung; und  
einem Anmeldungsinformationen-Verarbeitungsschritt des Gewinnens der entsprechenden Daten aus den AV-Daten, die in dem AV-Daten-Speicher- und -Verwaltungsschritt gespeichert und verwaltet werden, entsprechend den Anmeldungsinformationen, wobei der Anmeldungsinformationen-Verarbeitungsschritt die Dienstanmeldung entsprechend den Anmeldungsinformationen ausführt.

## Revendications

1. Dispositif d'émission de télédiffusion destiné à émettre un programme télédiffusé composé de données audio-vidéo contenant au moins des informations vidéo ou audio et de référence, comprenant au moins :

a) un moyen (101) destiné à mémoriser et à gérer des données audio-vidéo, ledit moyen gérant lesdites données audio-vidéo et les données d'attributs de celles-ci, les données d'attributs comprenant un identificateur de données destiné à identifier les données audio-vidéo, et des paramètres de données destinés à gérer les données audio-vidéo,

b) un moyen (102) destiné à gérer une planification d'émission des données audio-vidéo à émettre, la planification identifiant des données audio-vidéo à émettre au moyen de l'identificateur de données,

c) un moyen (103) destiné à créer des informations de référence,

- d) un moyen (104) destiné à mémoriser et à gérer les informations de référence, et
- e) un moyen destiné à émettre les données audio-vidéo et les informations de référence dans une télédiffusion,

**caractérisé en ce que** les informations de référence comprennent des informations de commande destinées à commander, depuis le dispositif émetteur, une opération de mémorisation de données audio-vidéo sélective à exécuter par un dispositif récepteur, dans lequel ledit moyen de création d'informations de référence (103) est configuré pour

- 1) lire les données d'attributs des données audio-vidéo à partir dudit moyen de mémorisation et de gestion de données audio-vidéo,
  - 2) lire les informations de planification à partir dudit moyen de gestion de planification,
  - 3) créer des informations de contrôle de mémorisation de données audio-vidéo représentant lesdites informations de commande, les informations de contrôle de mémorisation de données audio-vidéo contrôlant les étapes de l'opération d'enregistrement sélective à exécuter par un dispositif récepteur,
  - 4) créer des informations de gestion de mémorisation audio-vidéo, comprenant des informations provenant des informations d'attributs, afin de permettre une gestion des données audio-vidéo du côté récepteur lorsqu'elles sont mémorisées par un récepteur conformément aux informations de contrôle de mémorisation de données audio-vidéo.
2. Dispositif d'émission de télédiffusion selon la revendication 1, dans lequel ledit moyen de création d'informations de référence (103) change les informations de référence conformément aux informations de planification lorsque la planification du programme télédiffusé est changée.
  3. Dispositif d'émission de télédiffusion selon la revendication 1, dans lequel ledit moyen de gestion de planification (102) change les informations de planification lorsque la planification du programme télédiffusé est changée, et crée une planification du programme de télédiffusion pour mettre fin à la télédiffusion dans le créneau de temps de télédiffusion.
  4. Dispositif d'émission de télédiffusion selon la revendication 1, dans lequel lesdites informations de commande représentent une commande de contrôle de mémorisation, et sont générées à partir d'au moins l'une d'informations vidéo, d'informations de temps, d'informations de code, d'informations audio, et d'informations de signalisation.

5. Dispositif d'émission de télédiffusion selon la revendication 1, dans lequel lesdites informations de commande représentent une commande de contrôle de mémorisation destinée à spécifier au moins l'un quelconque d'un début de mémorisation, de sa fin, d'une préparation pour une mémorisation, d'une pause de mémorisation, et d'un redémarrage d'une mémorisation.
6. Dispositif d'émission de télédiffusion selon l'une quelconque des revendications 1 à 5, comprenant en outre soit un moyen de création d'informations d'application (105) destiné à créer des informations d'application représentant un procédé d'utilisation des données audio-vidéo dans l'application de service afin d'exécuter un service de programme de télédiffusion à partir des informations de référence, soit un moyen de mémorisation et de gestion d'informations d'application (106) destiné à mémoriser et à gérer des informations d'application et à commander leur émission.
7. Dispositif d'émission de télédiffusion selon la revendication 6, comprenant en outre un moyen de mémorisation et de gestion d'application de service (107) destiné à mémoriser et à gérer l'application de service et à commander son émission, et un moyen d'émission (108) destiné à émettre les informations d'application délivrées depuis ledit moyen de mémorisation et de gestion d'informations d'application, et une application de service délivrée à partir dudit moyen de mémorisation et de gestion d'application de service.
8. Dispositif d'émission de télédiffusion selon l'une quelconque des revendications précédentes, dans lequel les paramètres de données comprennent une taille de données, une durée, des informations de mise à jour, et un identificateur de groupe destiné à identifier un groupe associé aux données audio-vidéo.
9. Dispositif d'émission de télédiffusion selon la revendication 8, dans lequel les informations de gestion de mémorisation créées par le moyen de création d'informations de référence (103) comprennent un nom de données créé à partir de l'identificateur de groupe, des informations de mise à jour, de la durée et de l'heure de début d'émission.
10. Dispositif de réception de télédiffusion destiné à recevoir un programme télédiffusé depuis le dispositif d'émission de télédiffusion selon la revendication 1, comprenant :

un moyen de réception (111) destiné à recevoir le programme télédiffusé et à le séparer et l'extraire en des données audio-vidéo et des infor-

mations de référence,  
un moyen de décodage audio-vidéo (112) destiné à décoder les données audio-vidéo en les mémorisant dans une mémoire tampon interne, un moyen de reproduction audio-vidéo (113) destiné à reproduire les données audio-vidéo, **caractérisé en ce que** le dispositif de réception de télédiffusion est chargé des informations de commande des informations de référence, pour contrôler la mémorisation des données audio-vidéo lorsqu'elle est ordonnée par les informations de commande, le dispositif de réception de télédiffusion comprenant en outre :

un moyen de traitement d'informations de référence (115) destiné à contrôler la mémorisation des données audio-vidéo conformément aux informations de contrôle de mémorisation des informations de référence, et  
un moyen de mémorisation et de gestion de données audio-vidéo (114) destiné à mémoriser et à gérer les données audio-vidéo de même que des informations de gestion de mémorisation des informations de référence.

11. Dispositif de réception de télédiffusion selon la revendication 10, dans lequel le moyen de mémorisation et de gestion de données audio-vidéo (114) détermine s'il mémorise les données audio-vidéo ou non, lorsque la commande de contrôle de mémorisation est délivrée, et le moyen de mémorisation et de gestion de données audio-vidéo donne pour instruction de mémoriser les données audio-vidéo si le dispositif de réception détermine de mémoriser les données audio-vidéo.
12. Dispositif de réception de télédiffusion selon la revendication 11, dans lequel le dispositif détermine s'il mémorise les données audio-vidéo ou non en se référant au fait que le moyen de mémorisation et de gestion de données audio-vidéo du côté réception possède suffisamment de capacité pour mémoriser lesdites données audio-vidéo.
13. Dispositif de réception de télédiffusion selon la revendication 11, dans lequel le dispositif détermine s'il mémorise les données audio-vidéo ou non en se référant aux informations de gestion de mémorisation de données audio-vidéo pour savoir si les données audio-vidéo sont déjà mémorisées dans le moyen de mémorisation et de gestion de données audio-vidéo.
14. Dispositif de réception de télédiffusion selon la revendication 11, dans lequel, lorsque la commande de contrôle de mémorisation donne pour instruction

de mémoriser du côté réception, les informations de gestion de mémorisation des données audio-vidéo servent de référence, les informations de mise à jour sont enregistrées dans les données audio-vidéo déjà mémorisées dans le moyen de mémorisation et de gestion de données audio-vidéo, et les données précédentes sont supprimées, et de nouvelles données audio-vidéo sont mémorisées.

15. Dispositif de réception de télédiffusion selon la revendication 10 et configuré pour recevoir un programme émis depuis le dispositif d'émission de télédiffusion de la revendication 6, comprenant en outre au moins :  
un moyen de réception (111) destiné à séparer et extraire au moins les informations d'application et une application de service reçues du dispositif d'émission de télédiffusion, un moyen de mémorisation et de gestion d'informations d'application destiné à mémoriser et à gérer les informations d'application, un moyen de mémorisation et de gestion d'application de service (117) destiné à mémoriser et à gérer l'application de service, et un moyen de traitement d'informations d'application (118) destiné à extraire les données correspondantes des données audio-vidéo mémorisées et gérées dans ledit moyen de mémorisation et de gestion de données audio-vidéo conformément aux informations d'application, dans lequel ledit moyen de traitement d'informations d'application (118) exécute l'application de service conformément aux informations d'application.
16. Dispositif de réception de télédiffusion selon la revendication 15, dans lequel ledit moyen de traitement d'informations d'application (118) exécute l'application de service conformément aux informations d'application, et supprime les données correspondantes des données audio-vidéo mémorisées et gérées dans ledit moyen de mémorisation et de gestion de données audio-vidéo.
17. Dispositif de réception de télédiffusion selon la revendication 15, dans lequel ledit moyen de traitement d'informations d'application (118) enregistre les informations d'utilisateur de l'application de service dans les informations de gestion de mémorisation des données audio-vidéo.
18. Dispositif de réception de télédiffusion selon la revendication 17, dans lequel ledit moyen de traitement d'informations d'application (118) exécute l'application de service conformément aux informations d'utilisateur de l'application de service.
19. Dispositif de réception de télédiffusion selon la re-



vendication 18, dans lequel ledit moyen de traitement d'informations d'application (118) supprime les données correspondantes des données audio-vidéo mémorisées et gérées dans ledit moyen de mémorisation et de gestion de données audio-vidéo conformément aux informations d'utilisateur de l'application de service.

20. Dispositif de réception de télédiffusion selon la revendication 17, dans lequel ledit moyen de traitement d'informations d'application (118) extrait un programme télédiffusé spécifié conformément aux informations d'application, et mémorise les données audio-vidéo correspondant au programme télédiffusé.

21. Procédé d'émission de télédiffusion destiné à émettre un programme télédiffusé composé de données audio-vidéo contenant au moins des informations vidéo ou audio et de référence, comprenant au moins :

a) une étape consistant à mémoriser et à gérer des données audio-vidéo et des données d'attributs de celles-ci, les données d'attributs comprenant un identificateur de données destiné à identifier les données audio-vidéo, et des paramètres de données destinés à gérer les données audio-vidéo,

b) une étape consistant à gérer une planification d'émission des données audio-vidéo à émettre, la planification d'émission identifiant des données audio-vidéo à émettre au moyen de l'identificateur de données,

c) une étape consistant à créer des informations de référence,

d) une étape consistant à mémoriser et à gérer les informations de référence, et

e) une étape consistant à émettre les données audio-vidéo et les informations de référence dans une télédiffusion,

**caractérisé en ce que** les informations de référence comprennent des informations de commande destinées à commander, depuis le dispositif émetteur, une opération de mémorisation de données audio-vidéo sélective à exécuter par un dispositif récepteur, dans lequel ladite étape de création d'informations de référence comprend en outre

1) une étape consistant à lire les données d'attributs des données audio-vidéo à partir dudit moyen de mémorisation et de gestion de données audio-vidéo,

2) une étape consistant à lire les informations de planification à partir dudit moyen de gestion de planification,

3) une étape consistant à créer des informations

de contrôle de mémorisation de données audio-vidéo représentant lesdites informations de commande, les informations de contrôle de mémorisation de données audio-vidéo contrôlant les étapes de l'opération d'enregistrement sélective à exécuter par un dispositif récepteur, 4) une étape consistant à créer des informations de gestion de mémorisation audio-vidéo, comprenant des informations provenant des informations d'attributs, pour permettre une gestion des données audio-vidéo du côté récepteur lorsqu'elles sont mémorisées par un récepteur conformément aux informations de contrôle de mémorisation de données audio-vidéo.

22. Procédé d'émission de télédiffusion selon la revendication 21, comprenant en outre soit une étape de création d'informations d'application consistant à créer des informations d'application représentant un procédé d'utilisation des données audio-vidéo dans l'application de service afin d'exécuter un service de programme de télédiffusion à partir des informations de référence, soit une étape de mémorisation et de gestion d'informations d'application consistant à mémoriser et à gérer les informations d'application et à commander leur émission.

23. Procédé d'émission de télédiffusion selon la revendication 21 ou 22, dans lequel les paramètres de données comprennent une taille de données, une durée, des informations de mise à jour et un identificateur de groupe destiné à identifier un groupe associé aux données audio-vidéo.

24. Procédé d'émission de télédiffusion selon la revendication 23, dans lequel les informations de gestion de mémorisation créées par l'étape de création d'informations de référence comprennent un nom de données créé à partir de l'identificateur de groupe, des informations de mise à jour, de la durée et de l'heure de début d'émission.

25. Procédé de réception de télédiffusion destiné à recevoir un programme télédiffusé émis dans le procédé d'émission de télédiffusion selon la revendication 21, comprenant au moins :

une étape de réception consistant à recevoir le programme télédiffusé et à séparer et extraire les données audio-vidéo et les informations de référence,

**caractérisé par :**

une étape de traitement d'informations de référence consistant à traiter des informations de commande des informations de référence, les informations de commande commandant si un élément des données

audio-vidéo doit être mémorisé ou non à la réception, et  
 une étape de mémorisation et de gestion de données audio-vidéo répondant aux informations de commande pour l'étape consistant à mémoriser et à gérer les données audio-vidéo en même temps que des informations de gestion de mémorisation des informations de référence,  
 dans lequel ladite étape de mémorisation et de gestion de données audio-vidéo commande la reproduction des données audio-vidéo mémorisées.

26. Procédé de réception de télédiffusion selon la revendication 25 et configuré pour recevoir un programme télédiffusé émis selon le procédé d'émission de télédiffusion de la revendication 22, comprenant au moins :

une étape de réception consistant à séparer et à extraire des informations d'application reçues et une application de service, une étape de mémorisation et de gestion d'informations d'application consistant à mémoriser et à gérer les informations d'application, une étape de mémorisation et de gestion d'application de service consistant à mémoriser et à gérer l'application de service, et une étape de traitement d'informations d'application consistant à extraire les données correspondantes des données audio-vidéo mémorisées et gérées à l'étape de mémorisation et de gestion de données audio-vidéo conformément aux informations d'application, dans lequel ladite étape de traitement d'informations d'application exécute l'application de service conformément aux informations d'application.

40

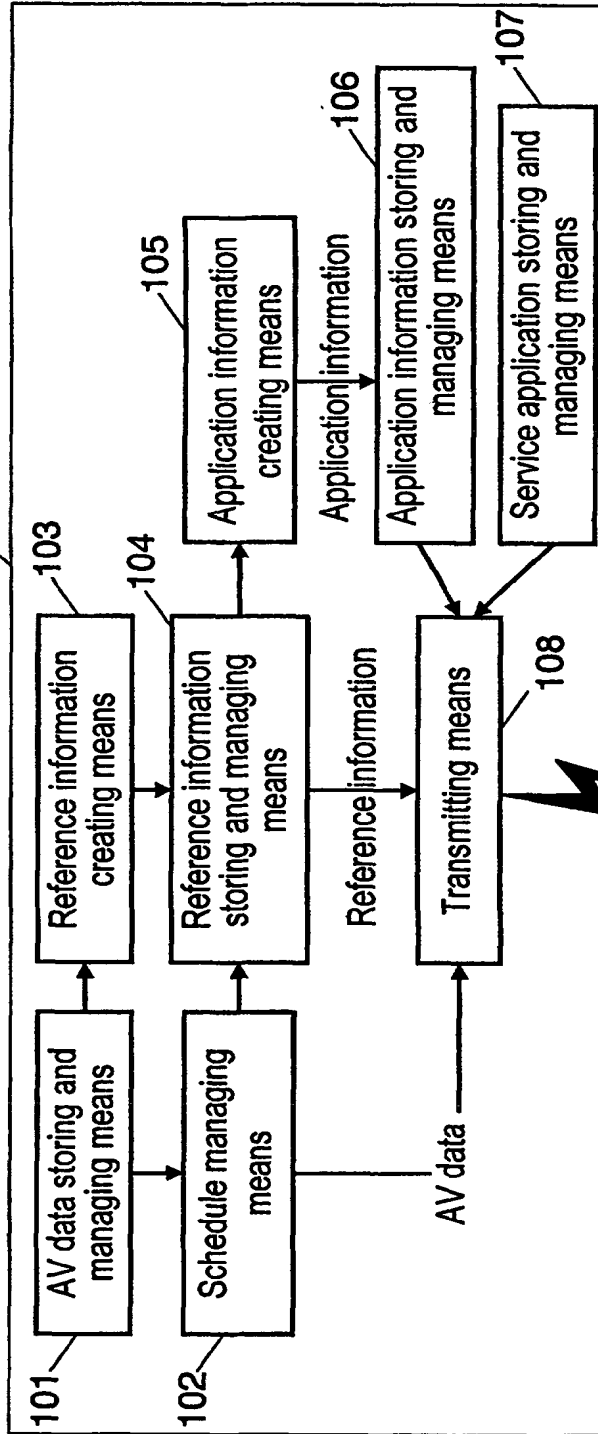
45

50

55

FIG. 1

100 Broadcast transmitting apparatus



110 Broadcast receiving apparatus

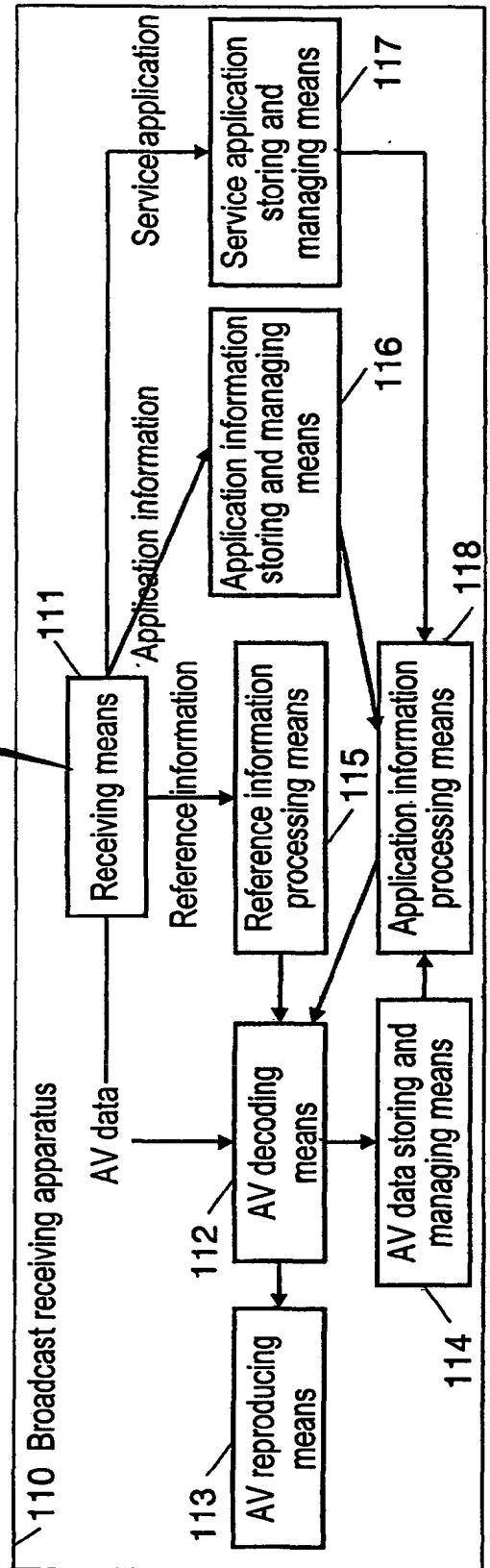


FIG. 2

## AV data attribute information

Data identifier	1	2	3	4	5	6	7	8	9	10	...
Data size	10	5	20	250	10	250	15	10	5	10	...
Duration	30	15	60	720	15	720	45	30	15	30	...
Update information	1	1	1	1	1	1	1	1	1	1	...
Group identifier	A	B	C	a	D	a	B	B	C	D	...

## Schedule information

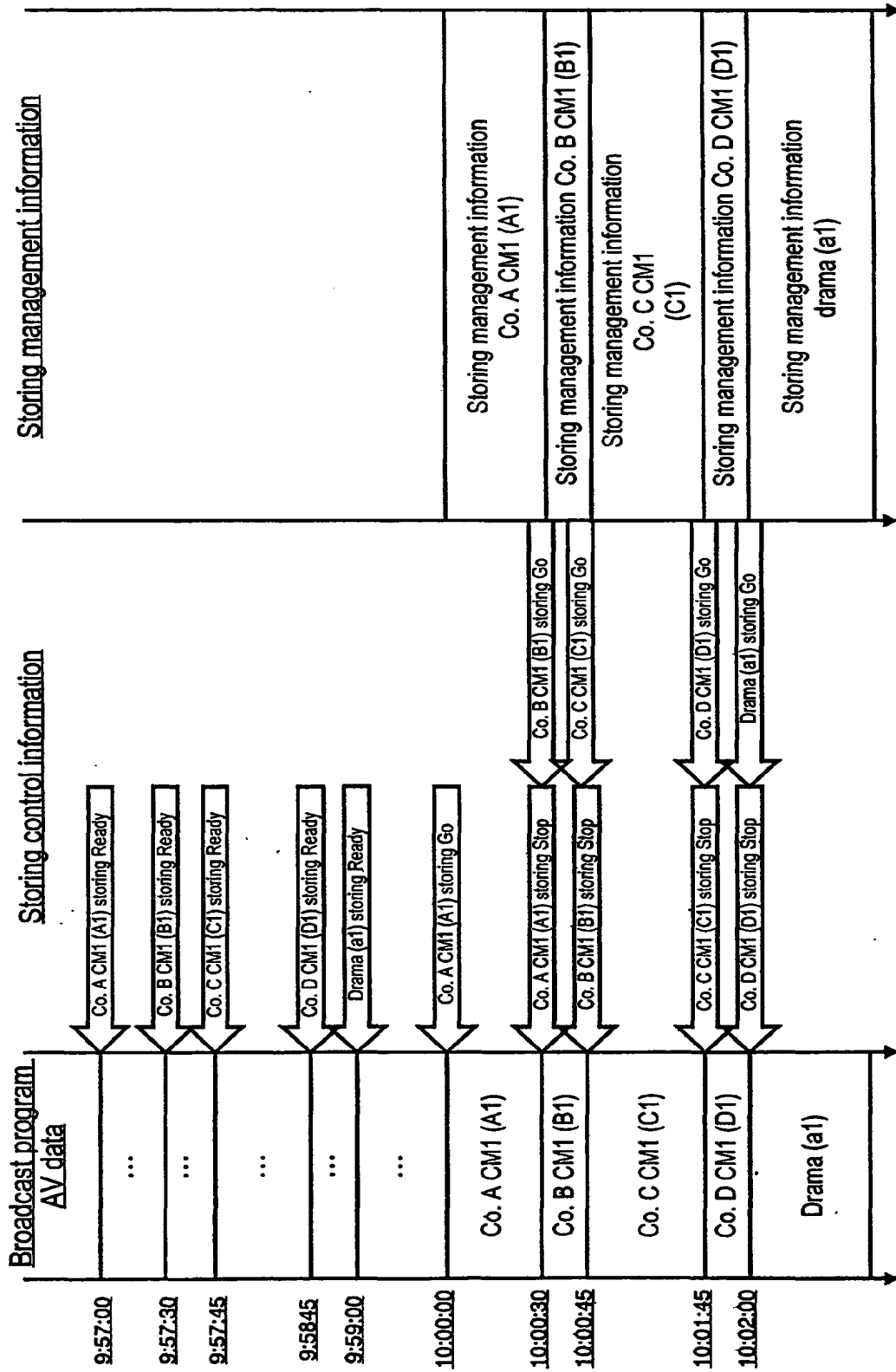
Data identifier	1	2	3	4	5	6	7	8	9	10	...
On-air start time	(10:00:00) (10:14:00) (10:28:00)	(10:00:30)	(10:00:45)	(10:02:00)	(10:01:45) (10:28:15)	(10:16:00)	(10:14:30)	(10:28:30)	(10:15:15) (10:28:00)	(10:15:30) (10:29:30)	...



## Reference information

Data identifier	1	2	3	4	5	6	7	8	9	10	
Storing control information											
Storing Ready	Size 10 (9:57:00...)	Size 5 (9:57:30)	Size 20 (9:57:45)	Size 250 (9:59:00)	Size 10 (9:58:45...)	Size 250 (10:13:00)	Size 15 (10:11:30)	Size 10 (10:25:30)	Size 5 (10:12:15...)	Size 10 (10:12:30...)	
Storing Go	1 (10:00:00...)	2 (10:00:30)	3 (10:00:45)	4 (10:02:00)	5 (10:01:45...)	6 (10:16:00)	7 (10:14:30)	8 (10:28:30)	9 (10:15:15...)	10 (10:15:30...)	
Storing Stop	1→ (10:00:30...)	2→ (10:00:45)	3→ (10:01:45)	4→ (10:14:00)	5→ (10:02:00...)	6→ (10:28:00)	7→ (10:15:15)	8→ (10:29:00)	9→ (10:15:30...)	10→ (10:16:00...)	
Storing management information											
Data name	A1	B1	C1	a1	D1	a2	B2	B3	C2	D2	
Update information	1	1	1	1	1	1	1	1	1	1	
Duration	30	15	60	720	15	720	45	30	15	30	
On-air start time	(10:00:00) (10:14:00) (10:28:00)	(10:00:30)	(10:00:45)	(10:02:00)	(10:01:45) (10:29:15)	(10:16:00)	(10:14:30)	(10:28:30)	(10:15:15) (10:29:00)	(10:15:30) (10:29:30)	

FIG. 3



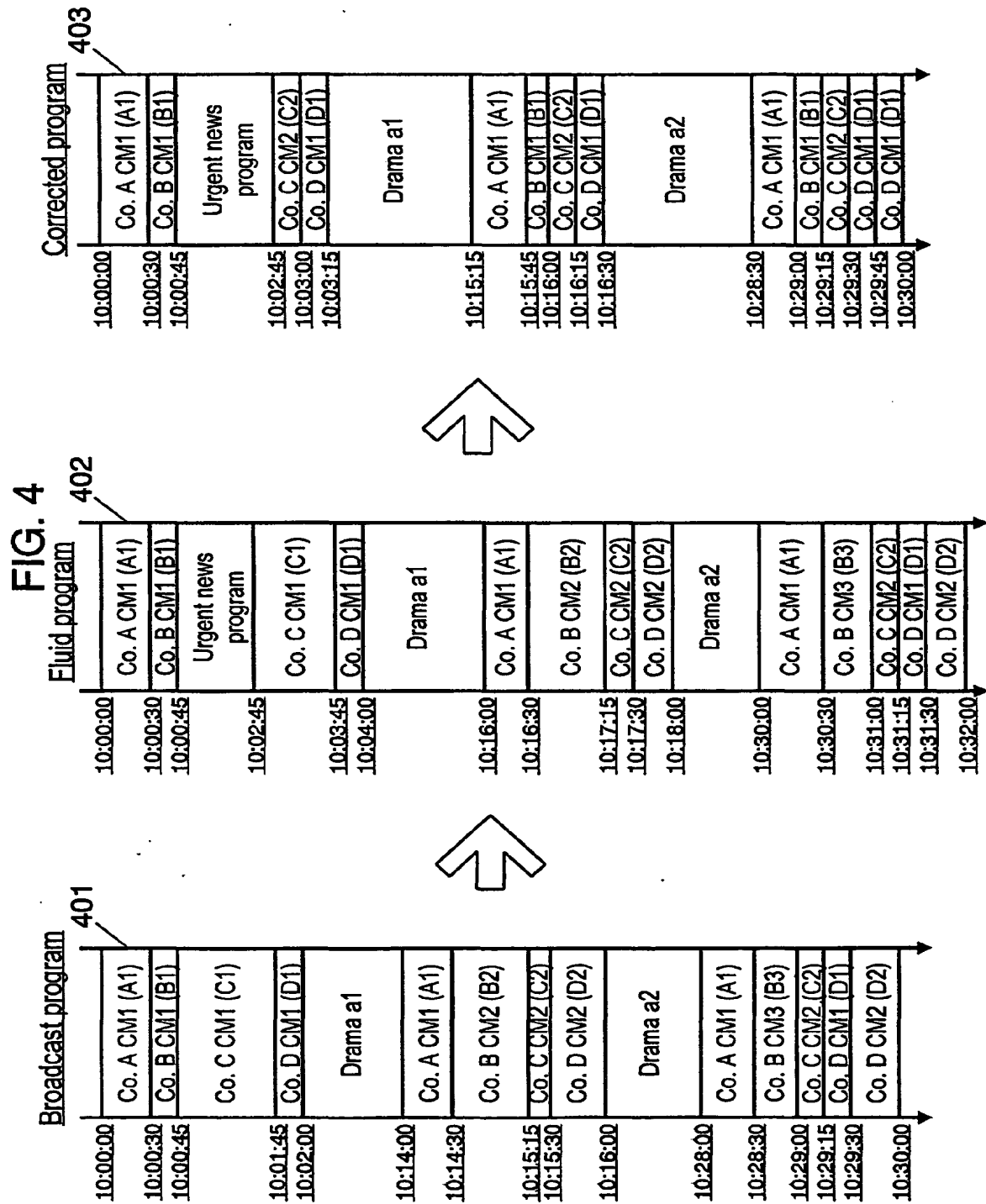


FIG. 5

## Schedule information

Data identifier	1	2	3	4	5	6	7	8	9	10	...
On-air start time	(10:00:00) (10:14:00) (10:28:00)	(10:00:30)	(10:00:45)	(10:02:00)	(10:01:45) (10:29:15)	(10:16:00)	(10:14:30)	(10:28:30)	(10:15:15) (10:29:00)	(10:15:30) (10:29:30)	...



## Schedule information

Data identifier	1	2	3	4	5	6	7	8	9	10	...
On-air start time	(10:00:00) (10:16:00) (10:30:00)	(10:00:30)	(10:02:45)	(10:04:00)	(10:03:45) (10:31:15)	(10:18:00)	(10:16:30)	(10:30:30)	(10:17:15) (10:31:00)	(10:17:30) (10:31:30)	...



## Reference information

Data identifier	1	2	3	4	5	6	7	8	9	10	...
Storing control information	Size 10 (9:57:00) (10:13:00) (10:27:00)	Size 5 (9:57:30)	Size 20 (9:59:45)	Size 250 (10:01:00)	Size 10 (10:00:45)	Size 250 (10:15:00)	Size 15 (10:13:30)	Size 10 (10:27:30)	Size 5 (10:14:15) (10:28:00)	Size 10 (10:14:30) (10:28:00)	...
Storing Ready	1 (10:00:00) (10:16:00) (10:30:00)	2 (10:00:30)	3 (10:02:45)	4 (10:04:00)	5 (10:03:45) (10:31:15)	6 (10:18:00)	7 (10:16:30)	8 (10:30:30)	9 (10:17:15) (10:31:00)	10 (10:17:30) (10:31:30)	...
Storing Stop	1→ (10:00:30) (10:16:30) (10:30:30)	2→ (10:00:45)	3→ (10:03:45)	4→ (10:14:00)	5→ (10:04:00) (10:31:30)	6→ (10:30:00)	7→ (10:17:15)	8→ (10:31:00)	9→ (10:17:30) (10:31:15)	10→ (10:18:00) (10:32:00)	...
Storing management information	A1	B1	C1	a1	D1	a2	B2	B3	C2	D2	...
Data name	1	1	1	1	1	2	1	1	1	1	...
Update information	30	15	60	720	15	30	45	30	15	30	...
On-air start time	(10:00:00) (10:16:00) (10:30:00)	(10:00:30)	(10:02:45)	(10:04:00)	(10:03:45) (10:31:15)	(10:18:00)	(10:16:30)	(10:30:30)	(10:17:15) (10:31:00)	(10:17:30) (10:31:30)	...

FIG. 6

Reference information										
Data identifier	1	2	3	4	5	6	7	8	9	10
Storing control information										
Storing Ready	Size 10 (9:57:00...)	Size 5 (9:57:30)	Size 20 (9:57:45)	Size 250 (9:59:00)	Size 10 (9:58:45...)	Size 250 (10:13:00)	Size 15 (10:11:30)	Size 10 (10:25:30)	Size 5 (10:12:15...)	Size 10 (10:12:30...)
Storing Go	1 (10:00:00...)	2 (10:00:30)	3 (10:00:45)	4 (10:02:00)	5 (10:01:45...)	6 (10:16:00)	7 (10:14:30)	8 (10:28:30)	9 (10:15:15...)	10 (10:15:30...)
Storing Stop	1→ (10:00:30...)	2→ (10:00:45)	3→ (10:01:45)	4→ (10:14:00)	5→ (10:02:00...)	6→ (10:28:00)	7→ (10:15:15)	8→ (10:29:00)	9→ (10:15:30...)	10→ (10:16:00...)
Storing management information										
Data name	A1	B1	C1	a1	D1	a2	B2	B3	C2	D2
Update information	1	1	1	1	1	1	1	1	1	1
Duration	30	15	60	720	15	720	45	30	15	30
On-air start time	(10:00:00) (10:14:00) (10:28:00)	(10:00:30)	(10:00:45)	(10:02:00)	(10:01:45) (10:29:15)	(10:16:00)	(10:14:30)	(10:28:30)	(10:15:15) (10:29:00)	(10:15:30) (10:29:30)



Application information (10:00 to 10:30)

Program information	Drama (a)
Broadcast information	A1,B1,C1,D1,a1,A1,B2,C2,D2,a2,A1,B3,C2,D1,D2



FIG. 7

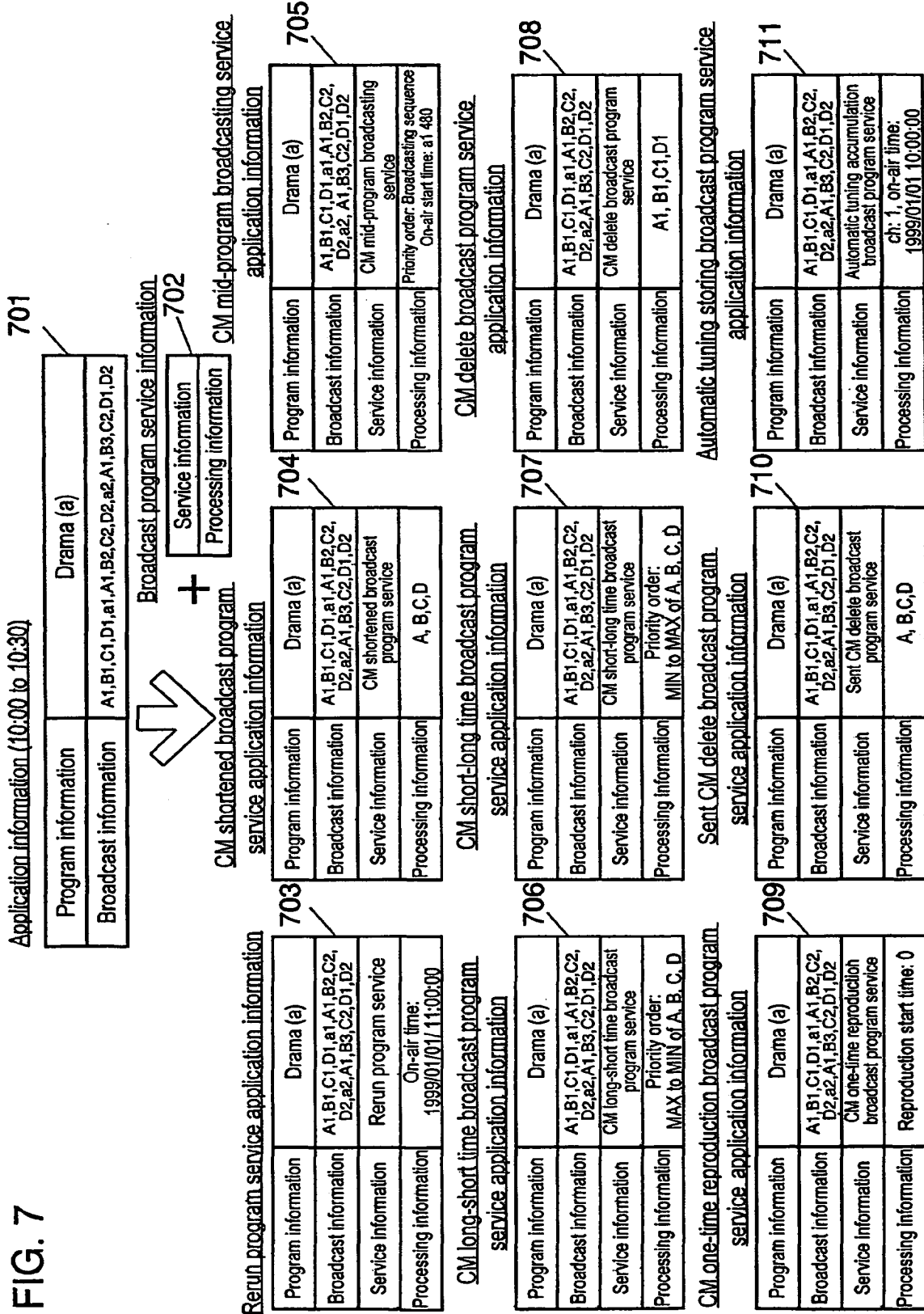


FIG. 8

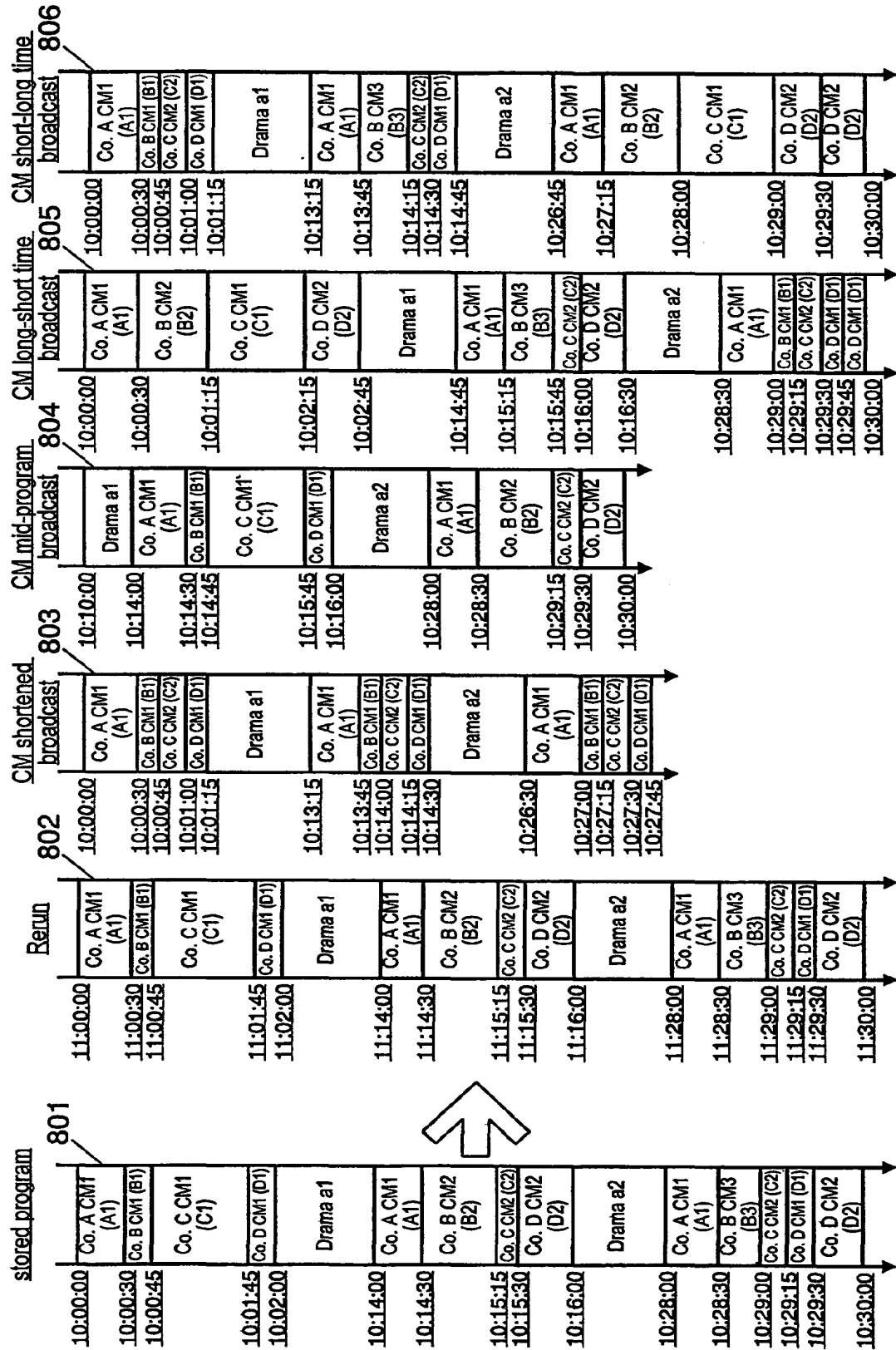


FIG. 9

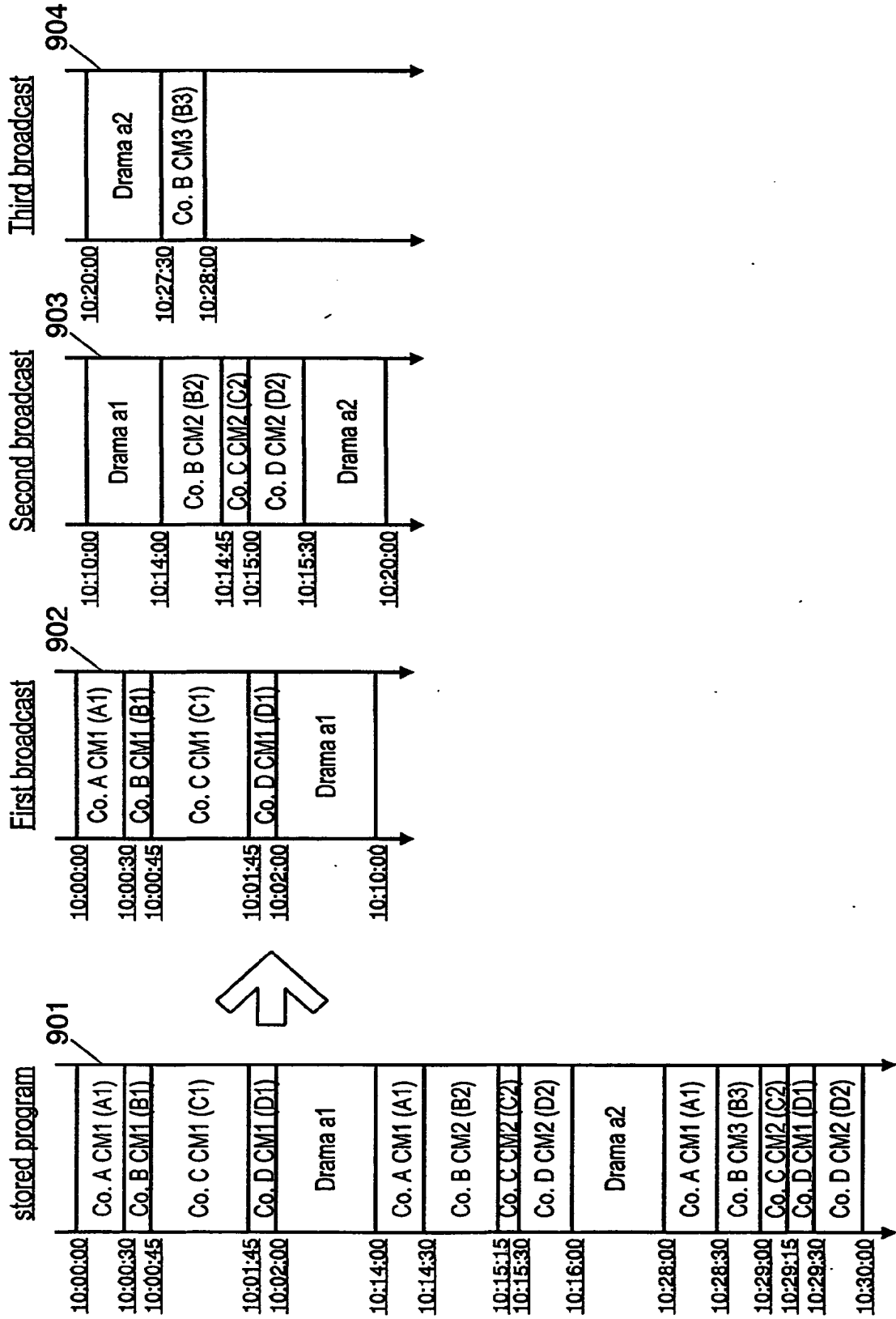


FIG. 10

## Storing management information

Data name	A1	B1	C1	a1	D1	a2	B2	B3	C2	D2
Update information	1	1	1	1	1	1	1	1	1	1
Duration	30	15	60	720	15	720	45	30	15	30
On-air start time	(10:00:00) (10:14:00) (10:28:00)	(10:00:30)	(10:00:45)	(10:02:00)	(10:01:45) (10:28:15)	(10:18:00)	(10:14:30)	(10:28:30)	(10:15:15) (10:29:00)	(10:15:30) (10:29:30)



After first broadcast

## Storing management information

Data name	A1	B1	C1	a1	D1	a2	B2	B3	C2	D2
Update information	1	1	1	1	1	1	1	1	1	1
Duration	30	15	60	720	15	720	45	30	15	30
On-air start time	(10:00:00) (10:14:00) (10:28:00)	(10:00:30)	(10:00:45)	(10:02:00)	(10:01:45) (10:28:15)	(10:18:00)	(10:14:30)	(10:28:30)	(10:15:15) (10:29:00)	(10:15:30) (10:29:30)
User information	CM one-time reproduction	CM one-time reproduction	CM one-time reproduction	CM one-time reproduction	CM one-time reproduction					



After second broadcast

## Storing management information

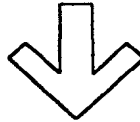
Data name	A1	B1	C1	a1	D1	a2	B2	B3	C2	D2
Update information	1	1	1	1	1	1	1	1	1	1
Duration	30	15	60	720	15	720	45	30	15	30
On-air start time	(10:00:00) (10:14:00) (10:28:00)	(10:00:30)	(10:00:45)	(10:02:00)	(10:01:45) (10:28:15)	(10:18:00)	(10:14:30)	(10:28:30)	(10:15:15) (10:29:00)	(10:15:30) (10:29:30)
User information	CM one-time reproduction	CM one-time reproduction	CM one-time reproduction	CM one-time reproduction	CM one-time reproduction	CM one-time reproduction	CM one-time reproduction		CM one-time reproduction	CM one-time reproduction

FIG. 11

1101

<u>CM one-time broadcast program service application information</u>	
Program information	Drama (a)
Broadcast information	A1,B1,C1,D1,a1,A1,B2,C2,D2,a2,A1,B3,C2,D1,D2
Service information	CM one-time reproduction broadcast program service
Processing information	Reproduction start time: 0

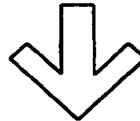
After first broadcast



1102

<u>CM one-time broadcast program service application information</u>	
Program information	Drama (a)
Broadcast information	A1,B1,C1,D1,a1,A1,B2,C2,D2,a2,A1,B3,C2,D1,D2
Service information	CM one-time reproduction broadcast program service
Processing information	Reproduction start time: a1 480

After second broadcast



1103

<u>CM one-time broadcast program service application information</u>	
Program information	Drama (a)
Broadcast information	A1,B1,C1,D1,a1,A1,B2,C2,D2,a2,A1,B3,C2,D1,D2
Service information	CM one-time reproduction broadcast program service
Processing information	Reproduction start time: a2 270

FIG. 12

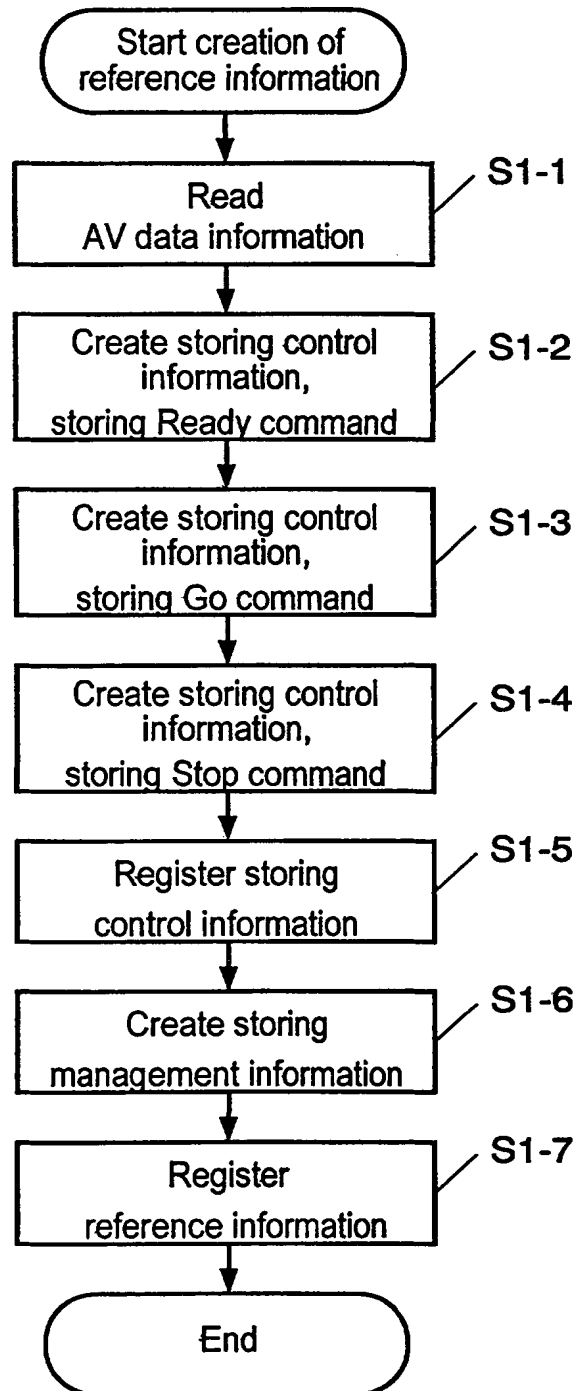


FIG. 13

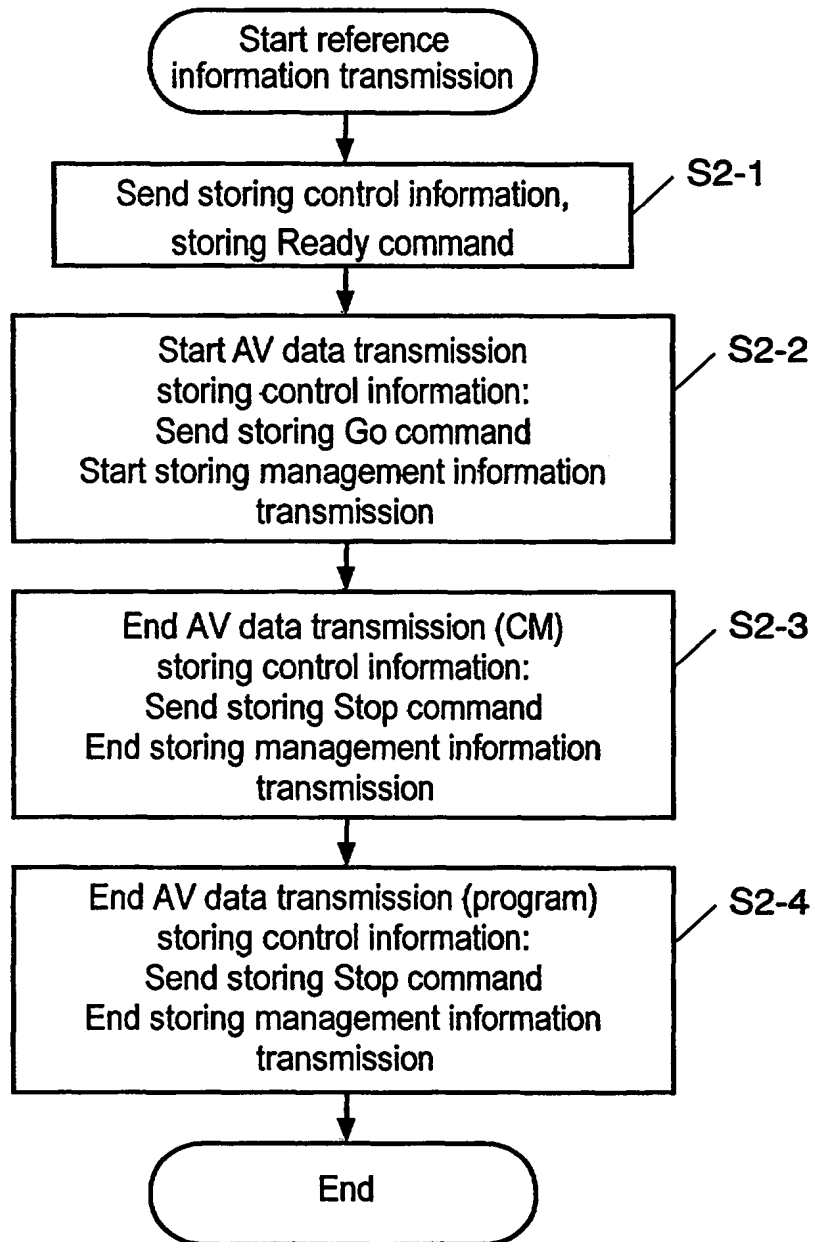


FIG. 14

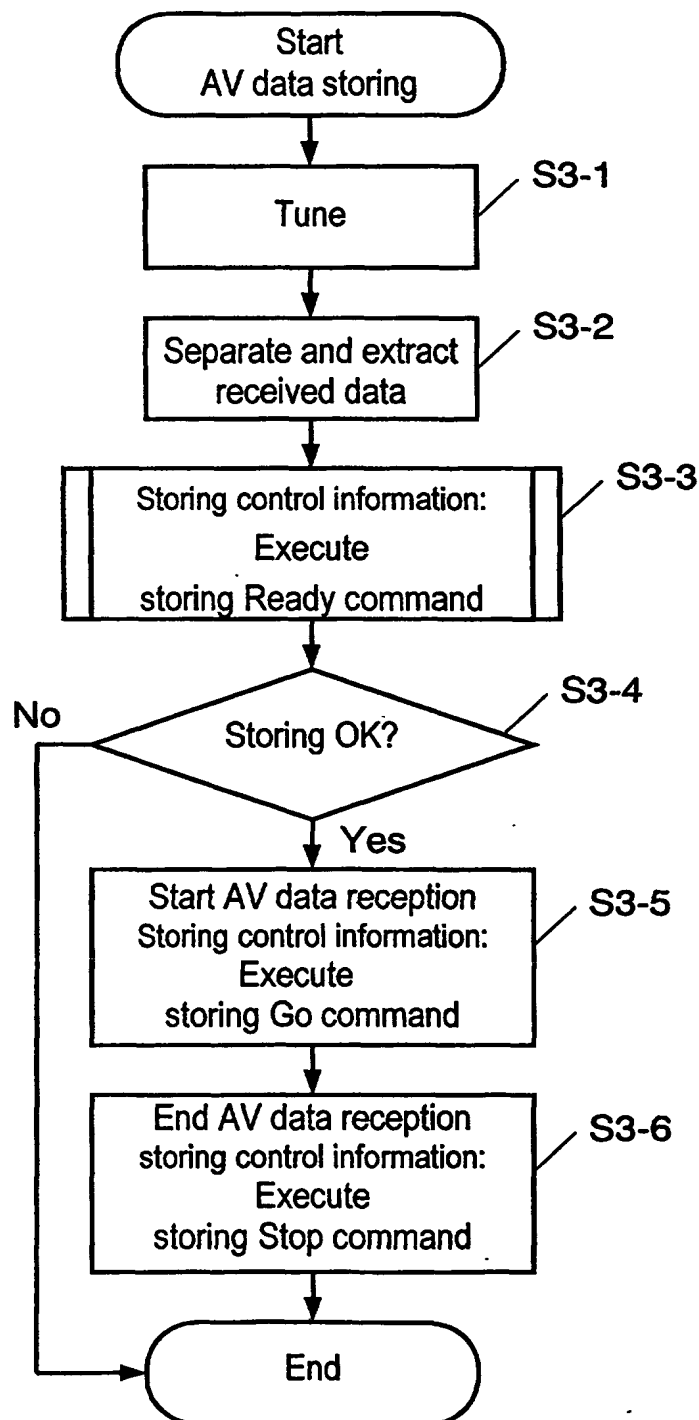




FIG. 15

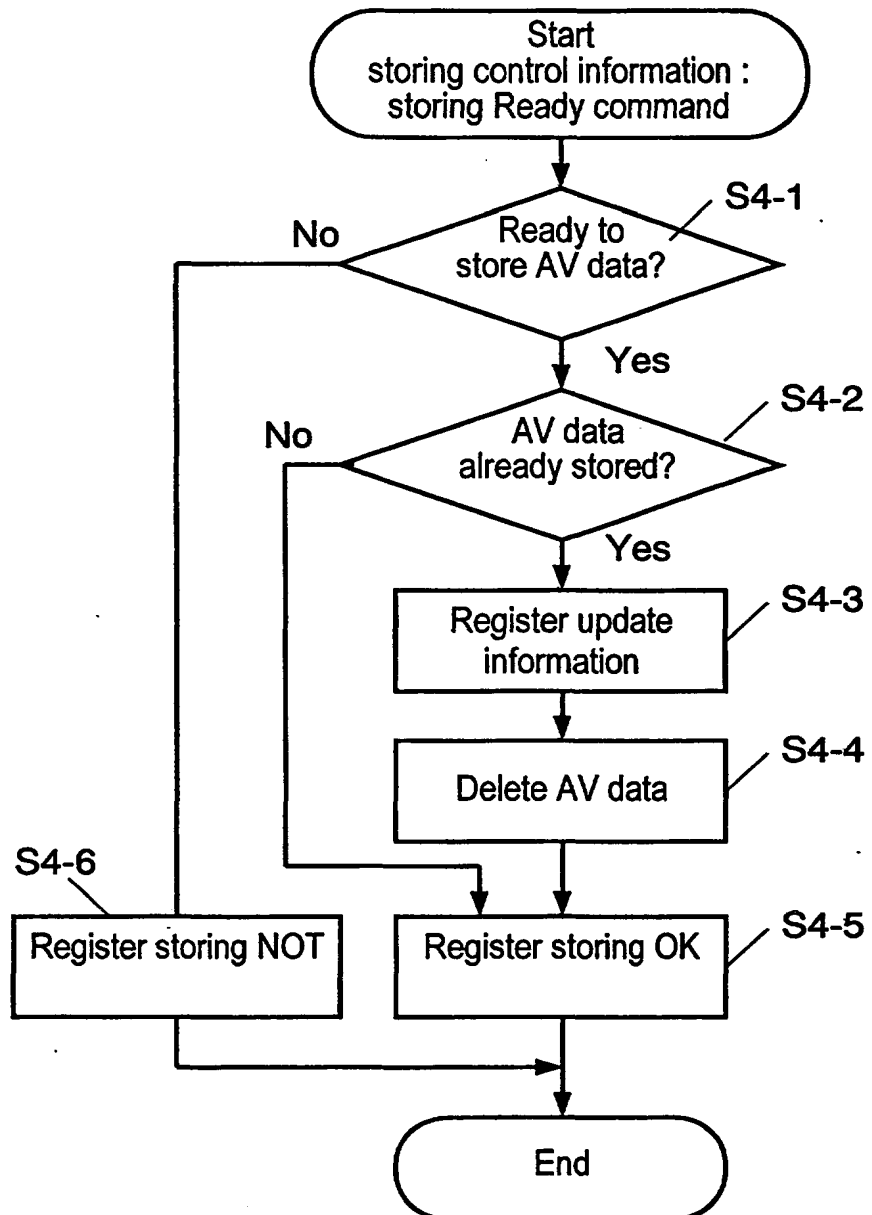


FIG. 16

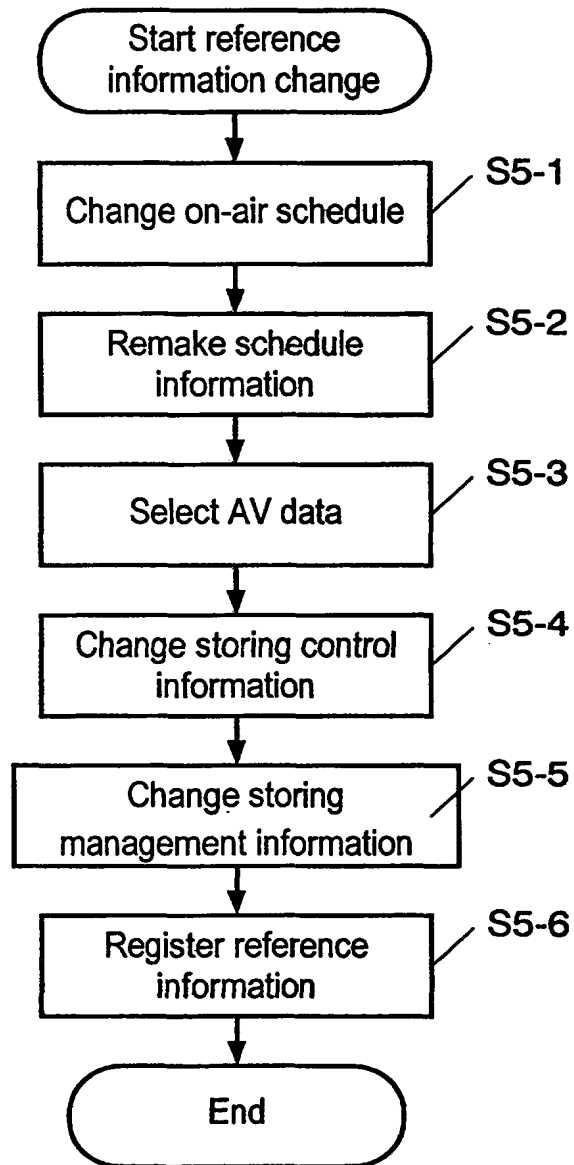


FIG. 17

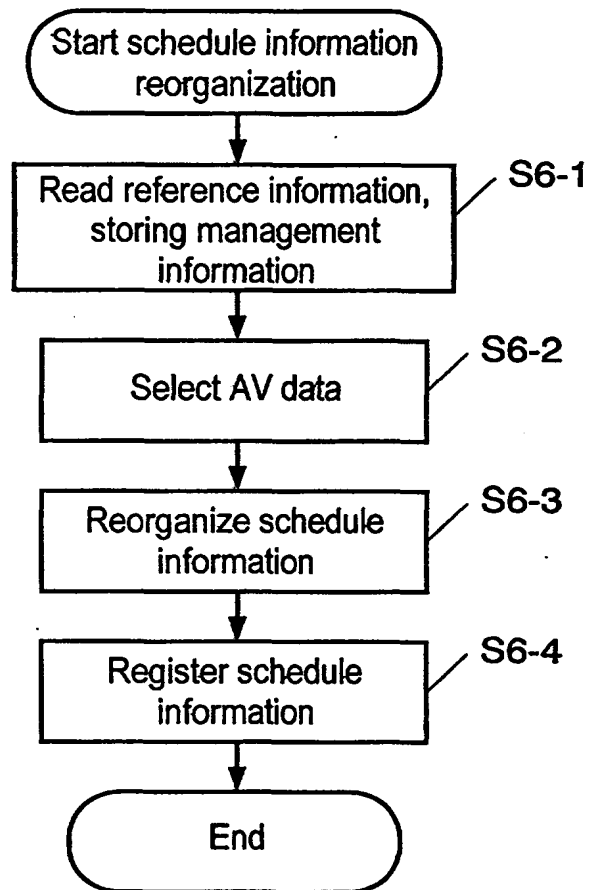


FIG. 18

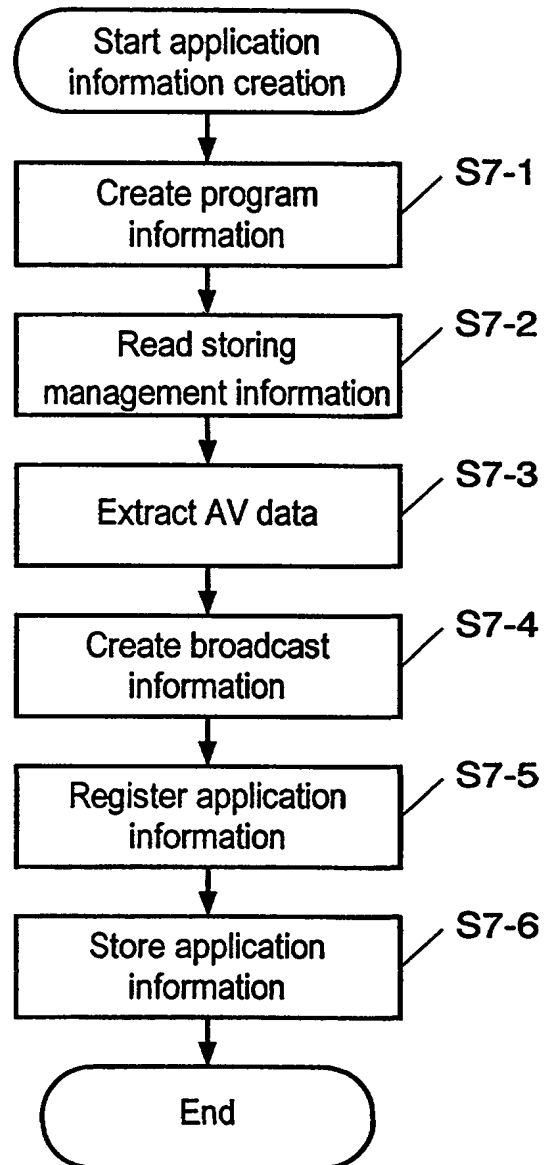


FIG. 19

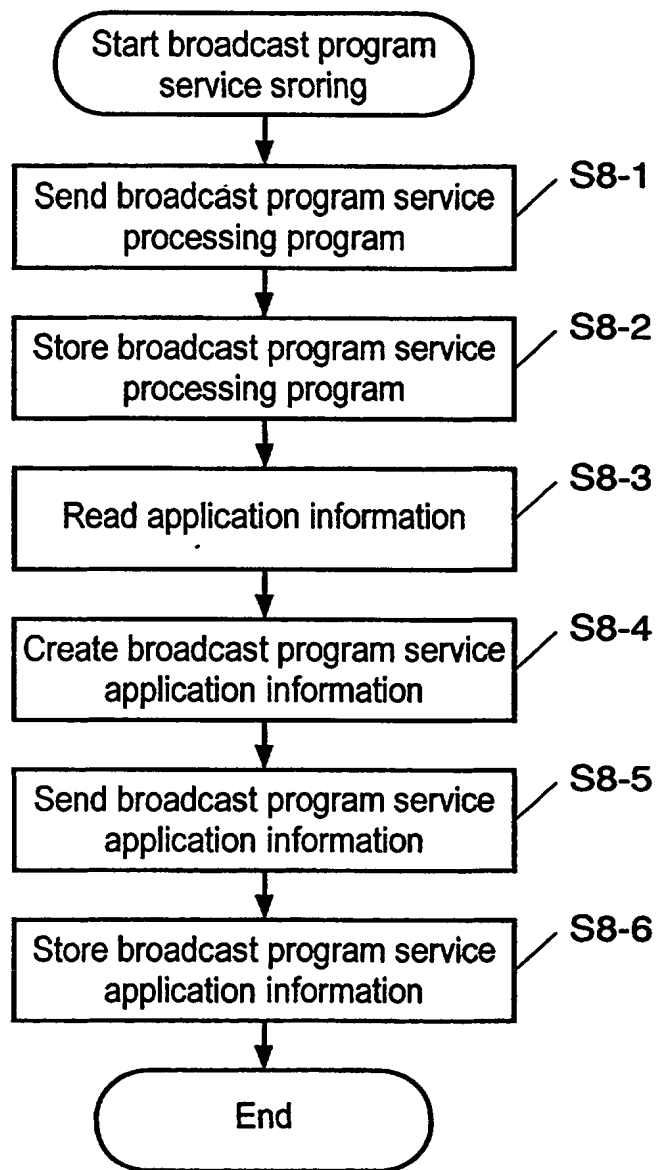


FIG. 20

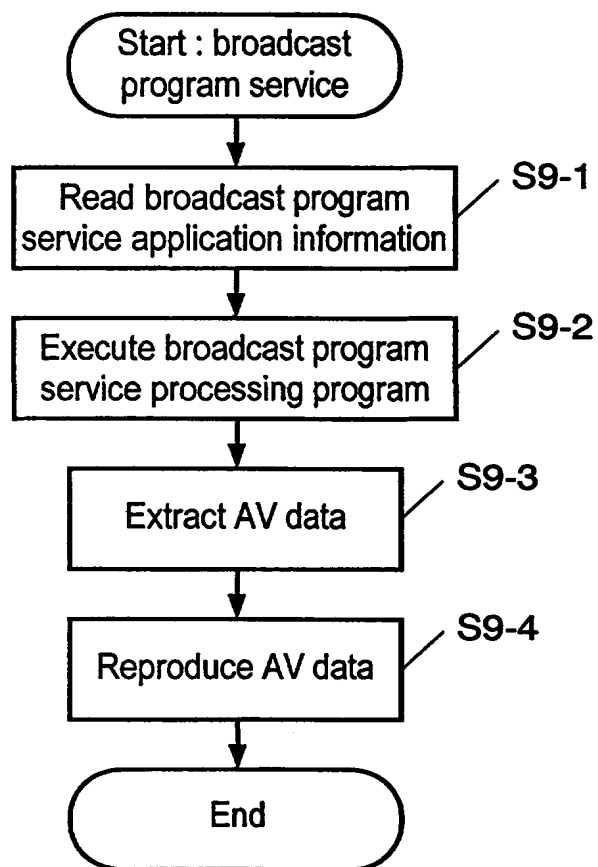


FIG. 21

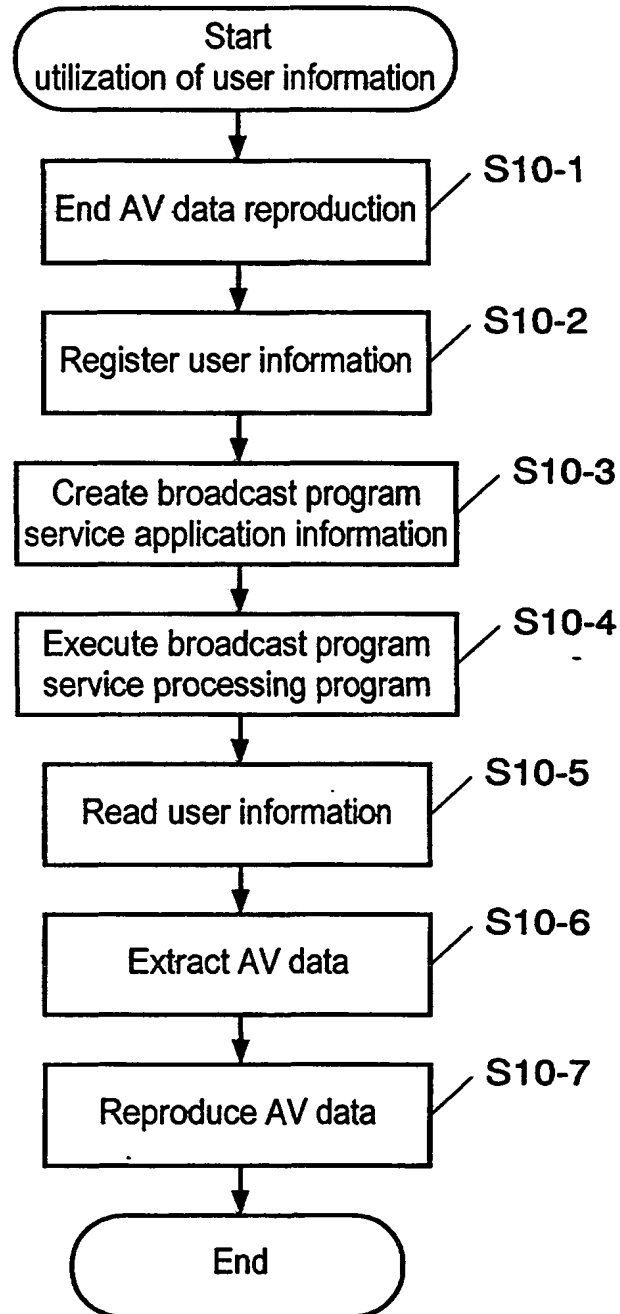


FIG. 22

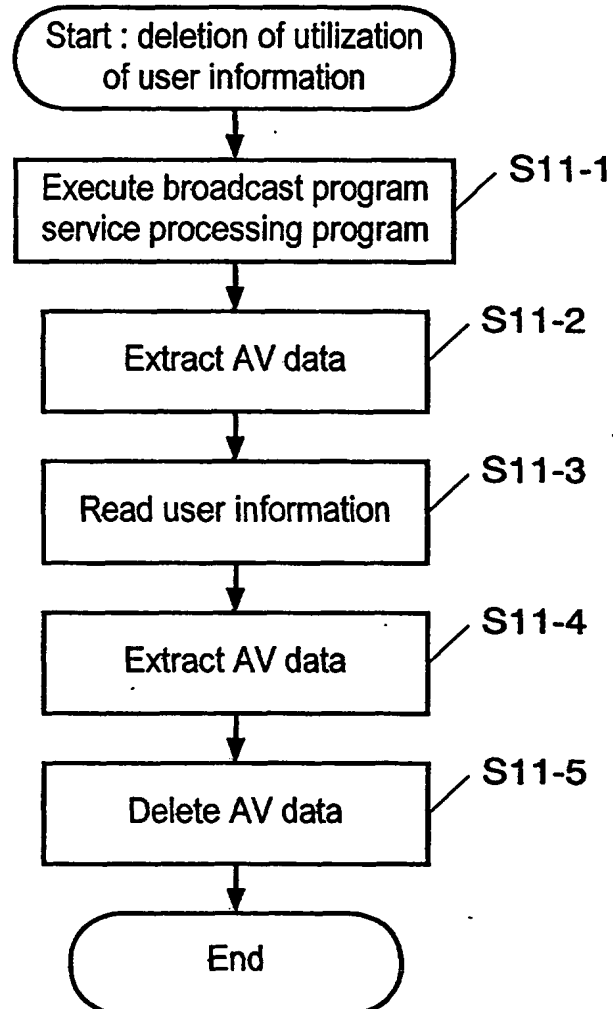




FIG. 23

